

Catalogue of Microscopes and
Accessories ❀ ❀ Microtomes ❀
Bacteriological Apparatus
Laboratory Supplies and Instru-
ments for Clinical Diagnosis



FIFTH EDITION

Chas. Lentz & Sons, Manufacturers of
Surgical Instruments, Hospital and Labora-
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Philadelphia, U. S. A. ❀ ❀ ❀ Established 1816

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FIFTH EDITION, 1899

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...OF...

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AND ACCESSORIES

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Laboratory Supplies

AND INSTRUMENTS FOR

Clinical Diagnosis



CHAS. LENTZ & SONS

Factory, Office and Salesrooms

18 AND 20 NORTH ELEVENTH STREET

PHILADELPHIA, U. S. A.

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FIFTH EDITION, 1899

CATALOGUE

OF

Microscopes

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Bacteriological Apparatus



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PHILADELPHIA

AND BOSTON

Clinical Diagnosis



CHAS. LEWIS & SONS

PHILADELPHIA, U.S.A.

16 AND 20 NORTH ELEVENTH STREET

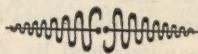
PHILADELPHIA, U.S.A.

Preface



THE product of the hand and brain of the painter, designer or sculptor, and likewise the result of the labor of a skilled mechanic, will always realize a price which is in proportion to the master hand acquired by many years of costly experience and practice. A mechanic, with intuition and knowledge for designing, constructing or manufacturing bred in the bone, will always command high wages and the products of his labor will as a result be more costly to his employer, who should therefore, other things being equal, obtain higher prices for his goods than one who employs cheap, inexperienced workmen, and who uses cheap materials and inexpensive processes of manufacture.

We use only the very best materials obtainable, and the best processes of manufacture, such as hand-forging, with the strictest attention to detail and testing of the manufactured articles, and employ skilled and experienced workmen. Yet, through the use of modern and improved machinery, roomy workshops and storerooms, a good system of division of labor and a large and increasing output, and therefore the purchase of raw material in larger quantities, we are enabled to benefit our customers by supplying them with instruments and apparatus of the very finest quality and of exceptional merit, with the most modern improvements due to suggestions received from our immediate and daily contact with the most advanced and prominent men in the medical profession, **at prices at least equal to any of our domestic or European competitors.**



CHAS. LENTZ & SONS

Announcement



IN compiling this catalogue we have carefully selected the microscopes which our experience has taught us are most suited to the physician, biologist and bacteriologist, respectively, and in the description we have endeavored to indicate the essential features of each stand which render it most suitable for any individual branch of work. Of those instruments that are so constructed that they can be used for any particular combination or for all branches of medical microscopy and biology, we have again endeavored to place before the reader, as clearly as possible, the reason for adding or discarding any particular accessory or for using any special form of stand or combination of objectives or eyepieces.

By this method the prospective purchaser can at once confine himself by exclusion to a group of two or three stands, and the ultimate selection of the one most suited to him individually is simply resolved into a matter of cost. All instruments are guaranteed free from optical or mechanical defects.

We are special Philadelphia agents for Bausch & Lomb Optical Company, of Rochester, N. Y., and have a large stock of all their products always on hand.

A copy of "Manipulation of the Microscope," by Mr. Ed. Bausch, accompanies each compound microscope purchased, except those sold to educational institutions at special rate.

In the portion of catalogue given to bacteriological and general laboratory supplies, we have listed only the latest and most improved forms of apparatus, all of the very finest quality and best workmanship, and have introduced quite a large number of new instruments and apparatus published for the first time with the issue of this catalogue.

As we are in touch with the most prominent workers, and are well posted in technique, we are always in a position to advise as to the best and most improved apparatus and methods, and we will at all times cheerfully give our correspondents any information we have or that we can obtain in such matters.

STOCK.—The apparatus, etc., listed is generally in stock and on view in our salesrooms and factory; prompt shipments can therefore be made. The technique in present laboratory methods, however, is so varied and individual idiosyncrasies so predominant, that it is advisable not to keep a large stock of some particular classes of goods, and occasionally, therefore, there would be an exception to the prompt delivery of some articles. In these cases we use every effort to fill the order satisfactorily in the shortest possible time and advise our correspondents of the probable date of delivery.

Suggestions are respectfully requested regarding new and useful apparatus, or improvements in same. Our experience is always at your service in developing an embryonic idea for a new instrument etc.

Supplements to this catalogue will be issued from time to time, also loose leaves, which can be pasted at the end of catalogue for reference.

Special apparatus of European manufacture will be imported to order only. Microscopes and accessories manufactured by Zeiss, Leitz or Reichert, are not kept in stock but can generally be supplied within three days after receipt of order. These goods are not sent on approval and are not returnable.

PHILADELPHIA

Notice

DIRECTIONS FOR ORDERING GOODS

1. Write the name of your Town, County and State, and your own name distinctly.

2. State carefully how you wish your goods forwarded, by mail, express, or otherwise. Freight should be used as little as possible, and is at customer's risk.

3. Parties not having a credit already established will understand the necessity of giving reliable references (Philadelphia or New York preferred), or of enclosing remittance to cover amount of purchase. Any orders unaccompanied by either references or cash will be declined or sent by express, C.O.D., including the charges for returning the money. If goods are ordered to be shipped C.O.D., sufficient money should be sent, as part payment, to cover expressage both ways. In remitting with the order, you will save the expense of collection.

4. Remittances can be made without risk, by Money Orders, Checks or Drafts to our order.

5. Goods not exceeding four pounds may be sent by mail, at the cost of 1 cent per ounce, when the remittance is made with the order. When goods are ordered by mail add sufficient to cover postage—any surplus will be returned with the goods.

6. Articles sent by mail cannot be traced and are only sent at customer's risk, unless registered, and as this costs only 8 cents additional, we request our customers to instruct us to have their packages registered. In no case will we be responsible for their loss.

7. When you re-order an article do not say "same as last," but refer to your invoice and word your order the same as the invoice, and in referring to back invoices give the date.

8. State distinctly the name of the articles desired, and their Catalogue numbers. **Do not mutilate the book by cutting out the illustrations.**

9. All goods will be carefully packed, and can be safely transported to any part of the country; therefore, for all delays or damages the purchaser must look to the transporters of the goods, who alone are legally responsible for their prompt and safe delivery.

10. Should there be any mistake or overcharge on our part, in filling an order, it will afford us much pleasure to correct it on receiving prompt notice of the same, as **it is our desire to give entire satisfaction in every transaction.**

11. When Instruments for Repairing, Sharpening, Polishing or Nickel-plating are sent to us, the name and address of the person sending them should accompany the package, to enable us to return them to their owner.

12. The privilege of changing the prices in this Catalogue is reserved, as the fluctuations in the cost of materials and wages may require.

Attention to the foregoing directions will enable us to fill all orders, large or small, as satisfactorily to the purchaser, as though he were present to make his own selections.

Botanical Student's Microscope

OOA

A high-grade instrument, at the lowest possible price, especially recommended for schools, for courses in biology and botany, and for industrial purposes. Especially useful also for home entertainment.

The stand is very rigid and is not easily deranged, being made of one solid piece, and is neatly japanned. The base is of horseshoe form, and is large, rendering it very stable. The mirror has one plane and one concave side.

The stage is extra large for the convenient manipulation of objects upon it, and is nicked so as not to be readily affected by liquids which may accidentally come in contact with its surface.

The action of the coarse adjustment is so perfect that a fine adjustment screw is unnecessary, even with the one-fifth inch objective.

The main tube has society screw and draw tube.

OOA1.	Stand OOA, with 1 eyepiece and $\frac{1}{2}$ inch special objective leader .	\$14 00
OOA2.	Stand OOA, with 2 eyepieces and $\frac{1}{2}$ inch special objective . . .	16 00
OOA3.	Stand OOA, with 1 eyepiece and $\frac{1}{2}$ inch and $\frac{1}{3}$ inch special objectives	20 00
OOA4.	Stand OOA, with 2 eyepieces and $\frac{1}{2}$ inch and $\frac{1}{3}$ inch special objectives	22 00
OOA5.	OOA4 and double revolving nosepiece	27 00

* This objective is divisible, the back combination being a $1\frac{1}{2}$ inch lens.

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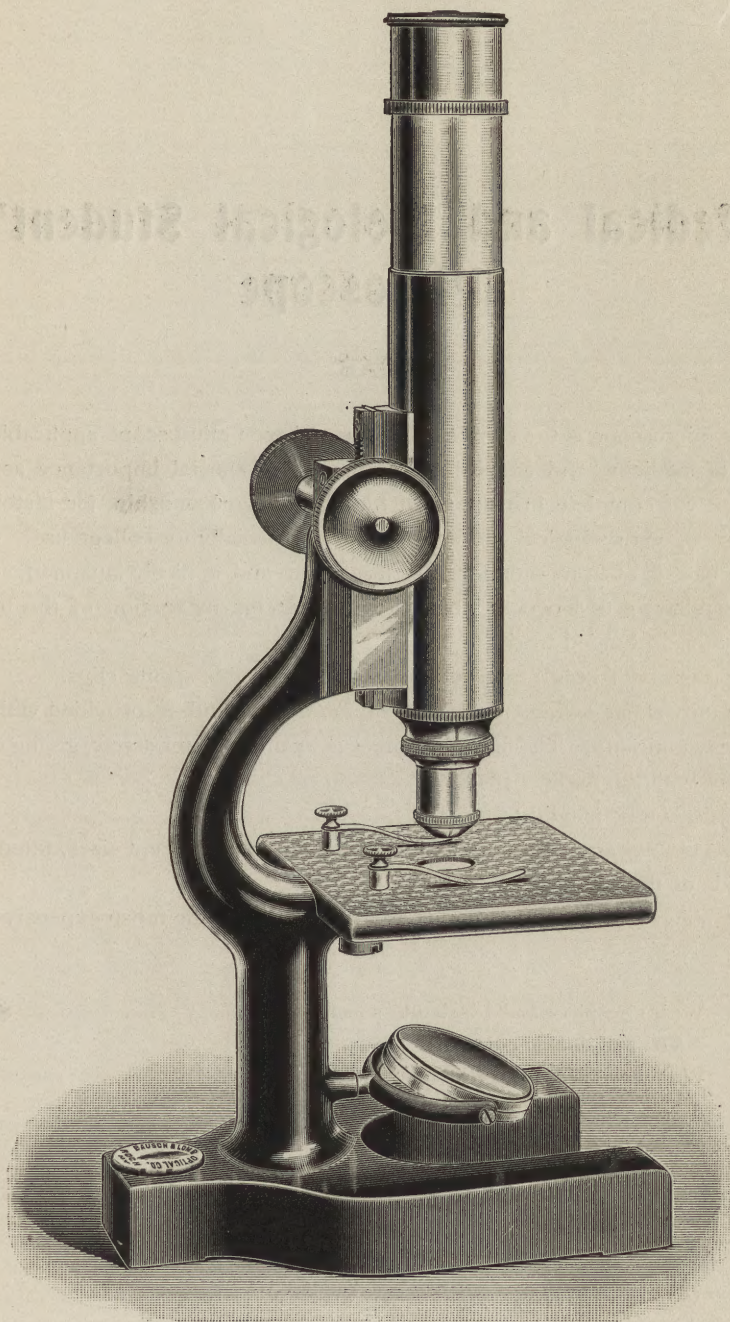


Figure one-half size

00A—BOTANICAL MICROSCOPE

Medical and Biological Student's Microscope

AAB

This microscope is the simplest Continental type microscope applicable to the student of medicine and general biology. It is of special importance as an inexpensive yet complete instrument of high-grade workmanship, for histological, pathological, embryological and urinary work, especially for college use.

The base is of horseshoe form, of large size, and is nicely japanned.

The pillar is of lacquered brass, with joint for inclination of the body—a necessity for prolonged work.

The stage is of brass, oxidized, and with removable spring clips.

The mirror bar swings for oblique illumination, and is provided with plane and concave mirrors. The fine adjustment is by micrometer screw, giving delicate movement with the highest powers.

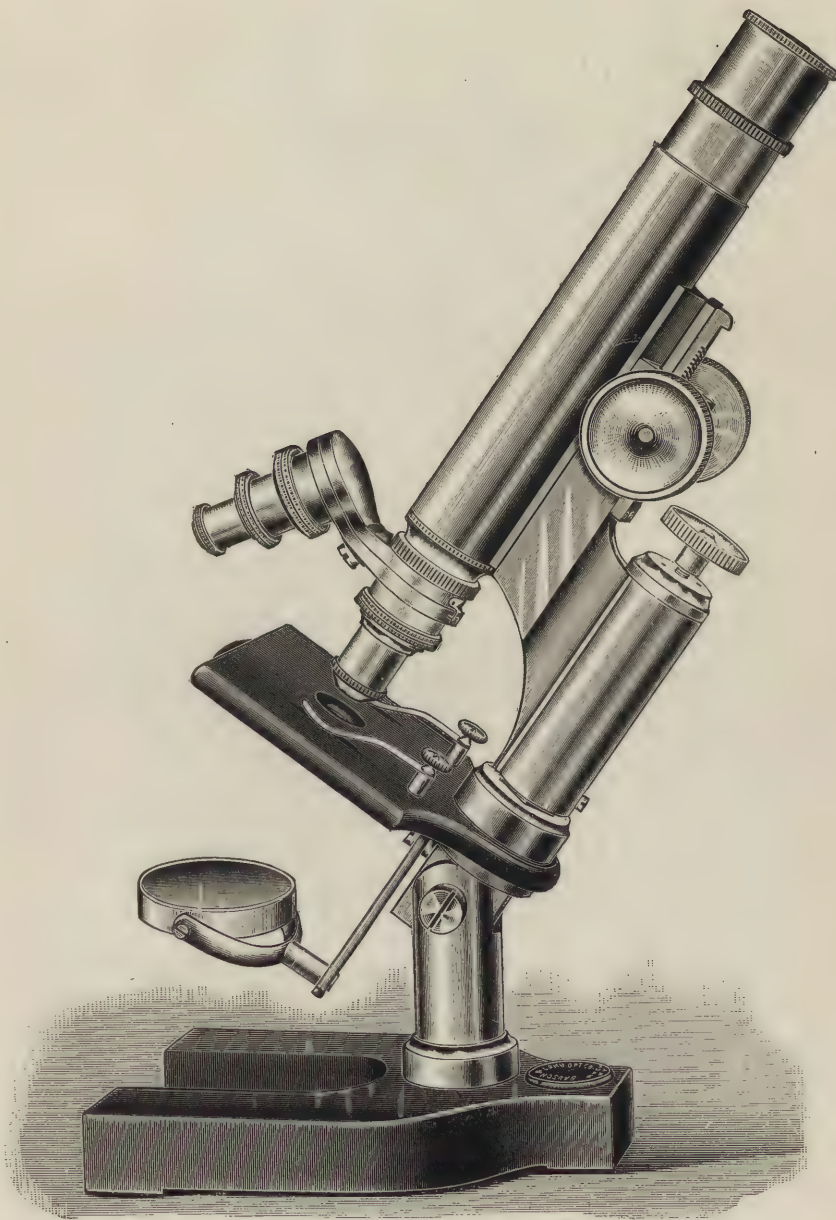
The draw tube is adjustable.

It has revolving diaphragm, with openings of four different sizes, fitted on the under side of the stage.

The objectives are the same as are supplied with the most expensive stand listed.

AAB1.	With 1 eyepiece and $\frac{3}{8}$ inch and $\frac{1}{8}$ inch objectives	\$37 00
AAB2.	AAB1 and double nosepiece	42 00
AAB3.	With 2 eyepieces and $\frac{3}{8}$ inch and $\frac{1}{8}$ inch objectives	39 00
AAB4.	AAB3 and double nosepiece	44 00
AAB5.	With 2 eyepieces and 2 inch, $\frac{3}{8}$ inch and $\frac{1}{8}$ inch objectives	45 00
AAB6.	AAB5 and triple nosepiece	52 50

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Cut one-half actual size

AAB2—MEDICAL AND BIOLOGICAL STUDENT'S MICROSCOPE

The Bacteriologist's and Physician's Microscope

BB

NEW CONSTRUCTION

This microscope cannot be equalled for laboratory work in medical microscopy. It exactly satisfies all demands for practical work in bacteriology, pathology, histology, urinalysis, blood examination, biology, pharmacy, etc.

The demand for this stand since its introduction, about four years ago, has been phenomenal, and **every microscope that we have sent out during this period has given perfect satisfaction.** We have yet to hear of a single complaint.

The BB microscope is elegant in design and finish. It is of brass throughout, highly polished and finished in permanent lacquer. The base is large, of special horseshoe form, heavily leaded to insure greater stability. The joint has cone-shaped bearings, so that the tube will remain firm at any inclination; it is provided with steel stops, to ensure parallelism of body of microscope and table when used for photography. The mirrors are extra large, plane and concave, and are adjustable on the mirror bar, which can be swung on its support, and has a click for central illumination.

The substage has set-screws for centering condenser and is vertically adjustable by the quick-acting screw shown at the side. The substage ring has been increased to the large standard size, giving full value of the illuminative power of the Abbe condenser, and is so arranged as to be quickly swung to one side from under the stage for changing accessories, etc. The stage is large, square, and exceedingly firm, the construction being indicated in the special description on page 12.

The fine adjustment is by delicate micrometer screw having graduated head for measuring thickness of objects. The micrometer screw acts directly on the triangular bearing of the arm, which is constructed after a new (patented) method, whereby we do away with set-screws and springs, which, by their relaxation and wear, produce lateral motion or shifting of the field of vision. These instruments are entirely free from this fault. The coarse adjustment is by diagonal rack and pinion of the greatest accuracy. The pinion is fitted with a special device by which **all wear is automatically compensated**, thus insuring the permanency of the adjustment. The main tube carries graduated and nicked draw tube working in cloth-lined sleeve. The polariscope can be used with the microscope. **All the edges of stand are rounded.**

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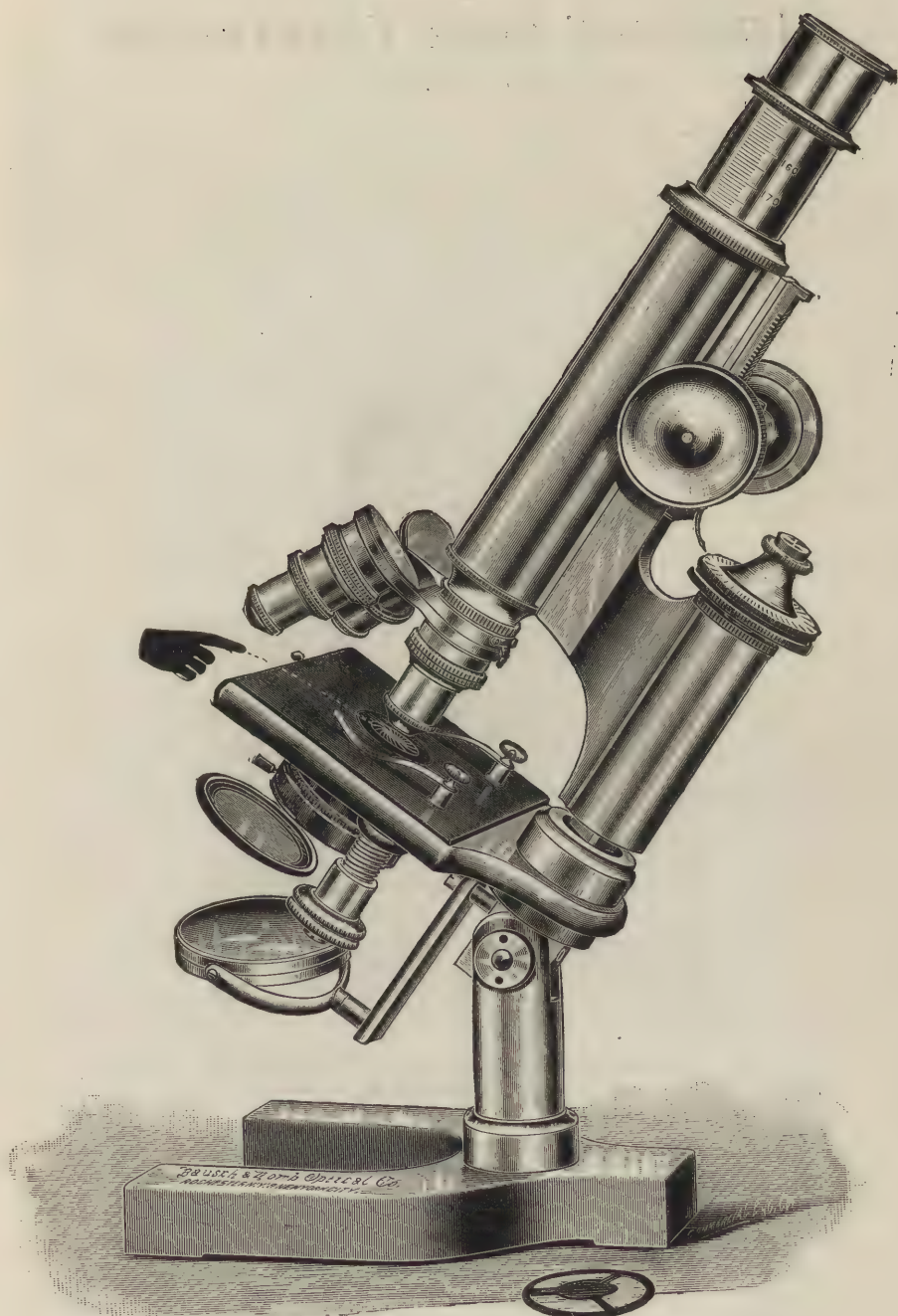


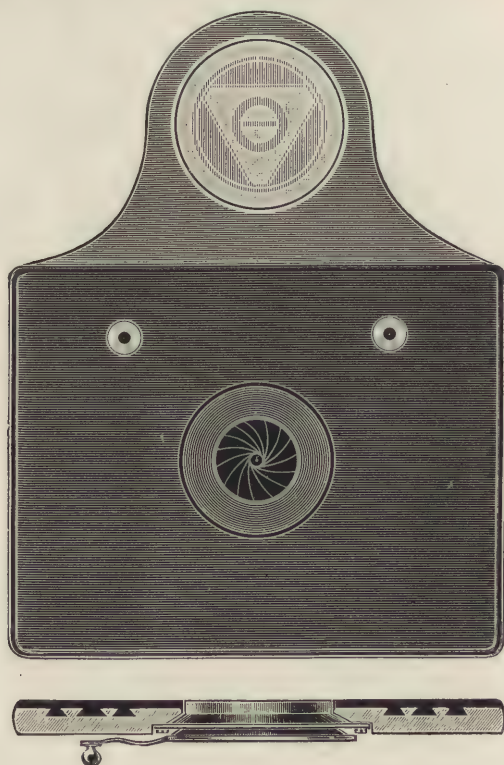
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BB—BACTERIOLOGIST'S AND PHYSICIAN'S MICROSCOPE
New Construction

CHAS. LENTZ & SONS

Improved Stage Construction OF BB AND OTHER STANDS

The stage of the microscope is in itself one of the most important parts of the instrument, and one the construction of which is very apt to be overlooked by the purchaser. The new stages are of ample size, exactly at right angles to the optical axis of the microscope and **perfectly rigid under manipulation**, and also possess perfectly plane surfaces. They are not affected by reagents used and are durable and **easy to move the object slide over**. To secure these requisites the construction (**patented**) shown in the figure has been adopted. The surfaces of all stages, except in the cheaper stands, are of hard rubber.



TOP VIEW AND CROSS-SECTION, SHOWING CONSTRUCTION OF STAGE AND
IRIS DIAPHRAGM

The metal part of the stage is recessed, and the surface is covered with headed studs. The rubber is forced into this depression while in a plastic condition, and vulcanized in such a manner that not only a mechanical but chemical union between the rubber and metal takes place. **This form of stage plate will never warp**, as plates applied with screws will do, and retains its finish indefinitely.

For examination of colonies of bacteria in Petri dishes the stage clips can be removed. **The colonies in the center of the dish can then be examined easily** on account of the large size of the stage.

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For examination of hyaline and other casts, crystals, etc., in urinary work, the Abbe condenser can be removed and the smaller iris diaphragm which is attached to the substage, can be used to its best advantage by reducing the aperture and lowering the plane of the iris by the focusing screw. **This is a very important improvement.**

Heretofore diaphragms with fixed openings have generally been employed for controlling the volume of light entering the objective, except when the condenser is used, in which case an Iris Diaphragm has been placed below the condenser.

This construction of the Iris Diaphragm is so designed as to be used in the plane of the stage or below it, and with or without the condenser, and to give any desired size of aperture, even sufficient for the condenser to be used **through** it in oil immersion contact with the slide if desired.

BB1.	Stand BB with 1 eyepiece, $\frac{2}{3}$ inch and $\frac{1}{5}$ inch objectives and Iris diaphragm	\$48 00
BB2.	BB1 and double nosepiece	53 00
BB3.	Stand BB with 2 eyepieces, $\frac{2}{3}$ inch and $\frac{1}{5}$ inch objectives and Iris diaphragm	50 00
BB4.	BB3 and double nosepiece	55 00
BB5.	Stand BB with 2 eyepieces, 2 inch, $\frac{2}{3}$ inch, and $\frac{1}{5}$ inch, objectives and Iris diaphragm	56 00
BB6.	BB5 and triple nosepiece	63 50
BB7.	Stand BB with 2 eyepieces, $\frac{2}{3}$ inch and $\frac{1}{5}$ inch, $\frac{1}{12}$ inch oil immersion objectives and Abbe condenser in mounting with 2 Iris diaphragms	87 50
BB8.	BB7 and triple nosepiece	95 00
BB1a.	Stand BB with 1 eyepiece, $\frac{2}{3}$ inch and $\frac{1}{5}$ inch objectives, Abbe condenser with 2 Iris diaphragms	60 00
BB2a.	BB1a and double revolving nosepiece	65 00
BB3a.	Stand BB with 2 eyepieces, $\frac{2}{3}$ inch and $\frac{1}{5}$ inch objectives, Abbe condenser, 1.20 N. A., and 2 Iris diaphragms	62 00
BB4a.	BB3a with double revolving nosepiece	67 00

The BB4 is the most complete outfit for medical work, exclusive of the study of bacteria and blood.

The BB8 is the most useful outfit for medical work inclusive of bacteriology and blood examination.

One-fifth or $\frac{1}{8}$ objectives will be substituted for $\frac{1}{6}$ if desired, at same price.

New complete substage, described on page 18, can be supplied on any of above stands at an additional cost of \$20. This substage is, however, not necessary for **medical** work.

Each BB Microscope is furnished in polished case with handle and lock and receptacles for eyepieces, objectives and accessories, with book "Manipulation of the Microscope," by Edward Bausch.

CHAS. LENTZ & SONS

Attachable Mechanical Stage

NEW CONSTRUCTION

FOR BB OR OTHER STANDS

The difficulties encountered by manufacturers in making mechanical stages have been not only in the line of producing a stage perfect when it leaves the factory, but **which will retain its delicate adjustment after a period of wear.**

In our opinion every microscope for individual use should be equipped with one of these stages, as they are now both durable and inexpensive. The Stage is attachable to any, except the very smallest Stand.* Any one may easily apply it to the microscope by simply following directions accompanying it. When ordered with the microscope, a special device is applied so that the stage may be removed, and replaced in exactly the same position.

The rectangular movements are both by rack and pinion, as all efforts to produce a perfect worm-screw movement have been unsuccessful. The rack and pinion is preferable, as it is perfectly reliable as to wearing qualities, is more sensitive than the screw, and gives equal speed in both directions. Millimeter graduations with verniers are attached to both movements. The object carrier is so arranged that the slide rests upon the surface of the microscope stage and may be used in immersion contact with the condenser if desired.

The stop against which the slide rests is adjustable, permitting the use of slides of various sizes. The object carrier has an extraordinary range, the movements being 35 and 60 mm. respectively.

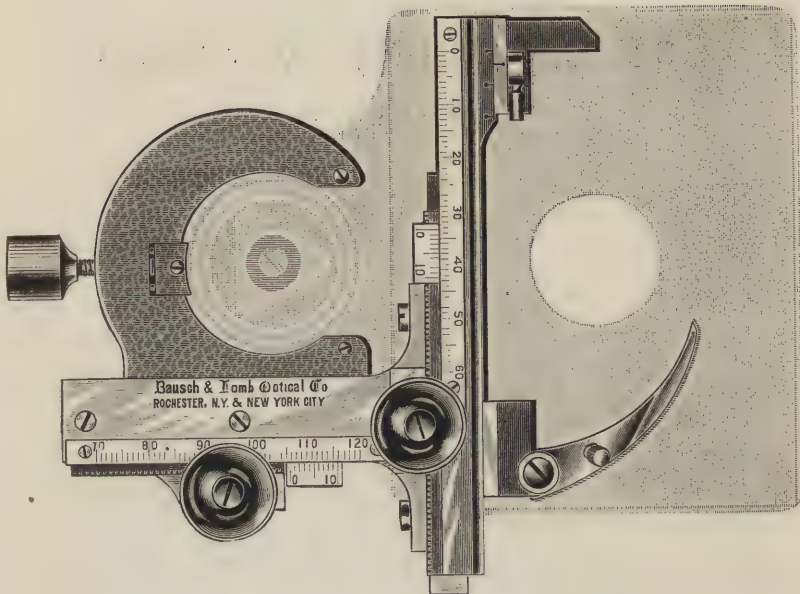
The stage is held in place on the microscope by a solid metal clamp, open at one side, which slips upon the base washer of the arm of the microscope in such a manner that the simple tightening of the thumb screw at the back locks it immovably. **The clamping device** may be left attached to the microscope permanently and the object carrier removed by simply racking it out of the slide. **This feature is of great value**, as the Mechanical Stage is necessary for search work, counting, etc., while an unobstructed stage is required when examining colonies of bacteria in Petri dishes, using watch glasses on the stages of the microscope, etc.

This mechanical stage is of the utmost value in searching for tubercle bacilli, casts, etc., when there are few in the specimen, or for use with the hæmacytometer for counting blood corpuscles. When a particular object or field is found (even with the $\frac{1}{2}$ objective) and its position noted with the vernier, it can be found again after thoroughly searching the specimen for others.

Attachable Mechanical Stage, in velvet-lined Morocco Case \$18 00

* When ordering this stage for microscopes other than Bausch & Lomb's make, kindly state : *a*, distance from center of arm to center of stage ; *b*, distance from top of stage to bottom of arm washer ; *c*, height of arm washer ; *d*, diameter of arm washer ; *e*, diameter of arm. If for one of the older instruments, give serial number of the instrument.

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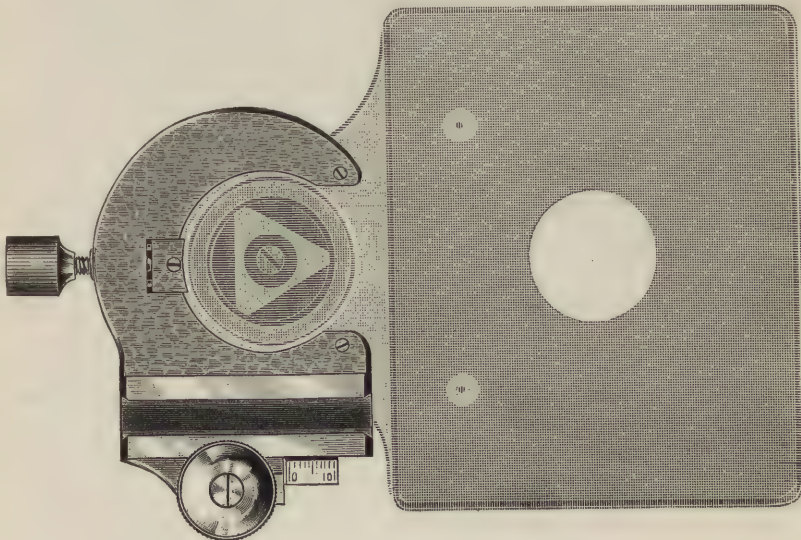


ATTACHABLE MECHANICAL STAGE

New Construction

As applied to Microscope

Figure three-fourths actual size



CLAMP OF ATTACHABLE MECHANICAL STAGE

Showing how object carrier may be detached and leave the stage free

The Laboratory Director's Microscope

CAS

At least one microscope of this special form should be included in the equipment of any laboratory. It is especially suited for the most advanced work in bacteriology, pathology, biology, etc. The stand is of large size and is fitted with an unusually large stage (being 95 x 115 mm.) and roomy substage, and is, on this account, an extremely desirable microscope for bacteriological work, the large plain stage being especially adapted for the examination of colonies of bacteria in the largest Petri dishes, etc., and is, therefore, very useful for accurate water and milk examinations.

The simplicity of construction of this stand renders it very desirable, even when put to constant daily laboratory use, and yet at the same time its large size and complete substage attachment commend it for the most advanced work.

The stand is of brass throughout and is finished in the most perfect manner. The base is of special horseshoe form with the back claw extending to form a tripod support, insuring the proper stability in any position of the body. The pillar is rectangular and the joint has locking device for securing the body in any desired position. The substage is the New Complete Substage described on pages 18 and 19. The upper surface of the stage is of hard rubber vulcanized into the metal support (patented). The fine adjustment is by micrometer screw acting on the triangular bearing of the arm, which is constructed in such a manner (patented) as to do away with all set-screws and springs which by their relaxation and wear cause lateral motion or movement of the field, an intolerable defect in a microscope.

The head of the micrometer screw is graduated for measuring thickness of objects. The coarse adjustment is by means of diagonal rack and pinion of the greatest precision, and provided with a special **automatic device for compensating any wear** which may occur.

The main tube carries a nickeled and graduated draw tube sliding in the cloth-lined sleeve.

The Abbe condenser 1.20 N. A. with dark ground stop and blue glass is a part of the microscope stand.

Each CAS Microscope is furnished in a polished case with handle and lock and with receptacles for eyepieces, objectives, and accessories.

CAS1.	Stand CAS with 1 eyepiece, $\frac{2}{3}$ inch and $\frac{1}{8}$ inch objectives	\$80 00
CAS2.	CAS1 and double revolving nosepiece	85 00
CAS3.	Stand CAS with two eyepieces, $\frac{2}{3}$ inch and $\frac{1}{8}$ inch objectives	82 00
CAS4.	CAS3 and double revolving nosepiece	87 00
CAS7.	Stand CAS with two eyepieces, $\frac{2}{3}$ inch and $\frac{1}{8}$ inch dry, and $\frac{1}{12}$ inch oil immersion objectives	120 00
CAS8.	CAS7 and triple revolving nosepiece	127 50
	$\frac{1}{8}$ or $\frac{1}{4}$ will be substituted for $\frac{1}{8}$ if desired, at same price.	

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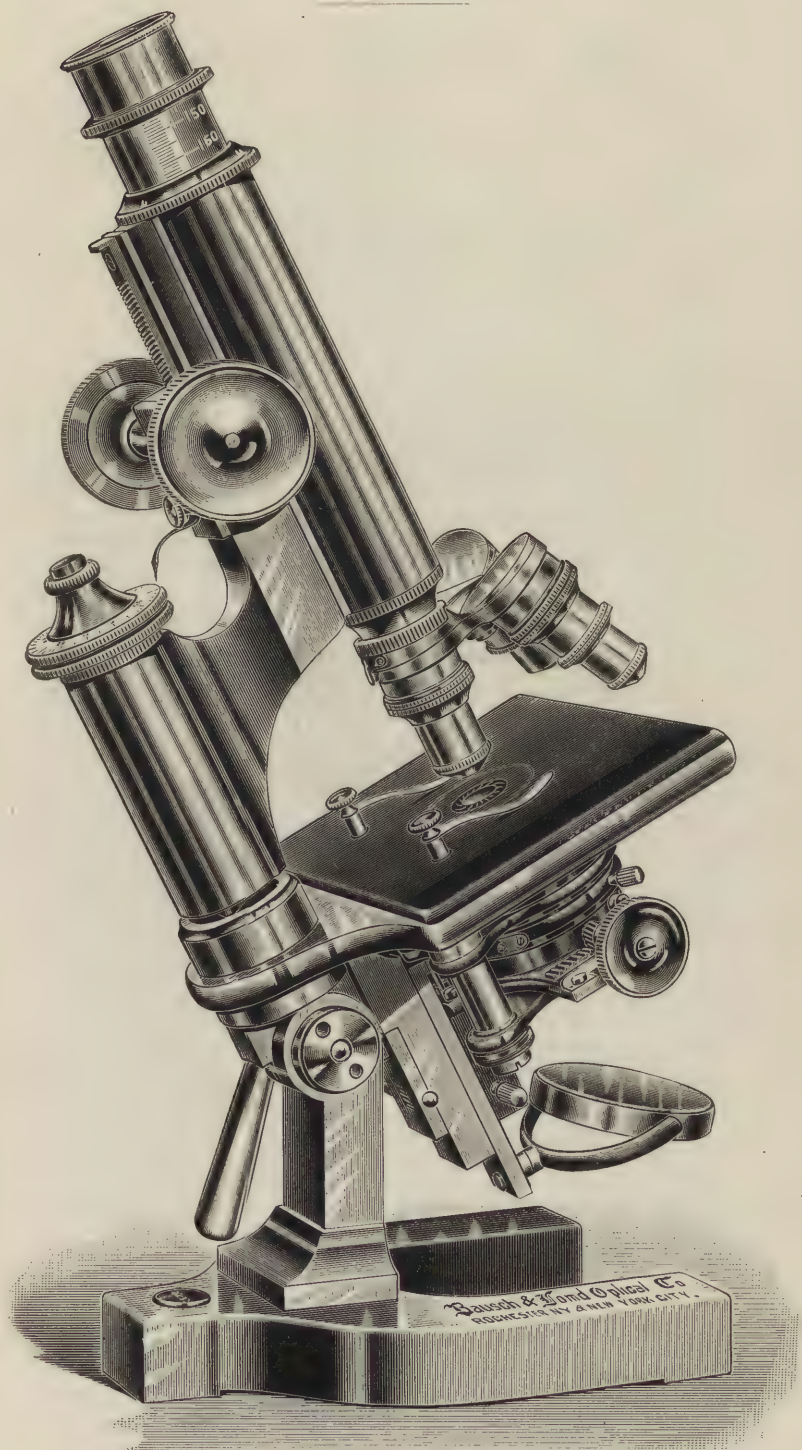


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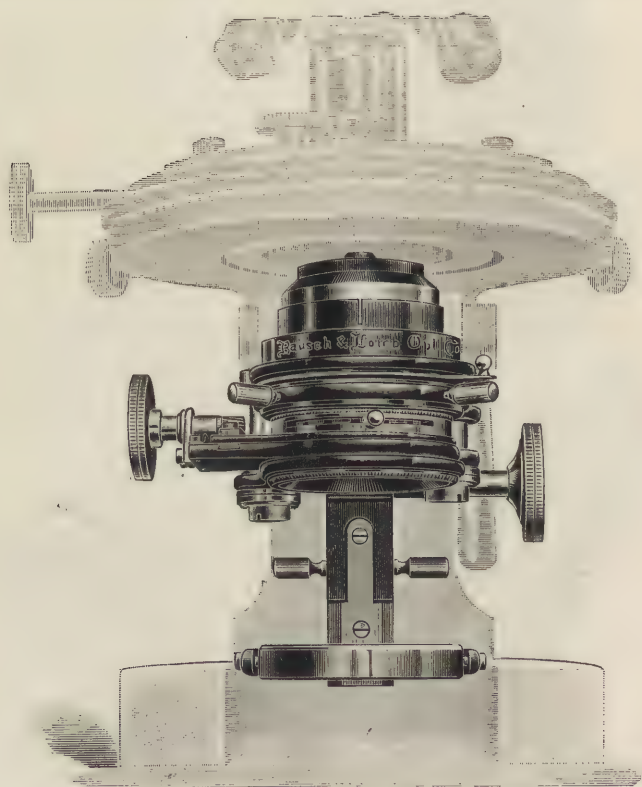
CAS—LABORATORY DIRECTOR'S MICROSCOPE

New Construction

CHAS. LENTZ & SONS

New Complete Substage

AS FITTED TO THE CAS. AND ALL MICROSCOPES, THE
CATALOGUE DESIGNATION OF WHICH ENDS IN S.



One-half actual size

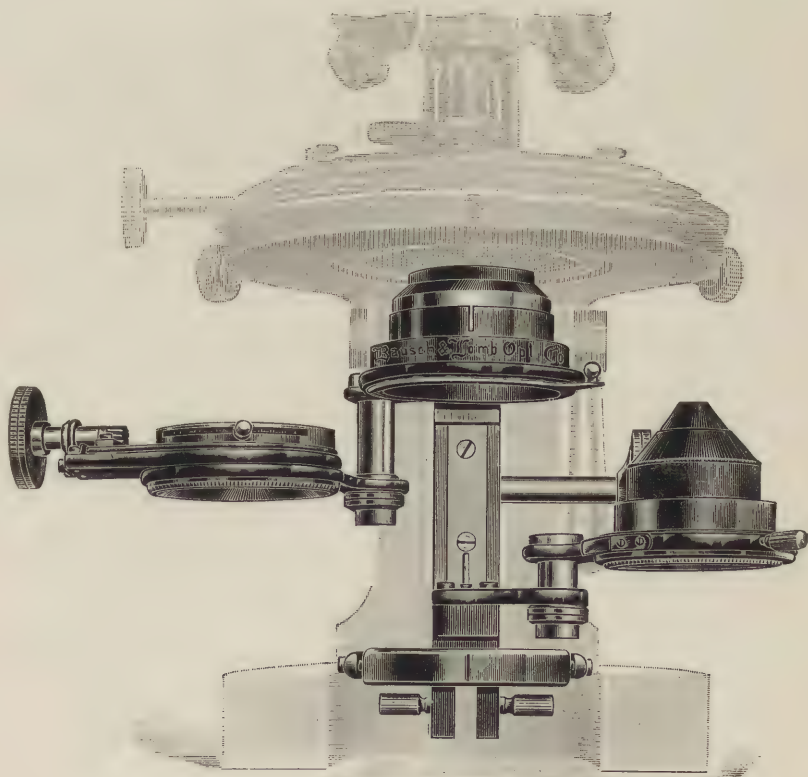
All substages heretofore constructed have been deficient either in stability or convenience, and more often than otherwise in both. The very limited space to be used and the variety of adjustments sometimes required in the substage have made it very difficult to design a form which, while sufficiently convenient, would be rigid enough to withstand constant wear, and at the same time not be out of proportion to the microscope. The New Complete Substage obviates all these difficulties in the simplest possible manner, and is without question the **most complete and practical substage yet made.**

The entire substage is supported on a heavy metal bar joined to the main arm of the microscope, and to which it is attached by slide with rack and pinion, whereby the whole substage may be adjusted with reference to the microscope stage. The slide and rack and pinion are the same as used on the coarse adjustment of the microscope, insuring the same accuracy and wearing qualities, the automatic device for retaining the pinion in adjustment, and the same thickness of metal having been retained.

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The substage is composed of three parts, arranged one above the other.

The upper part consists of a fixed ring, supporting the **removable Iris diaphragm**. This diaphragm is operated by a lever, easily accessible from the front of the substage, and is so arranged as to come directly in contact with the object slide or lower, as desired, thus **it can be placed in the most effective position for use without the condenser**. The middle section of the substage is movable vertically on the main substage axis and consists of a ring, with centering screws, carrying Abbe condenser, 1.20 N. A. The condenser ring swings laterally to the left of the instrument in such a manner that the condenser is entirely out of the path of rays from the mirror, and is also perfectly free for changing accessories. The condenser ring, the arm on which it is carried, and the sliding support are all of the most stable construction, so that there is perfect rigidity and accuracy of centering throughout. The vertical adjustment of this section of the substage permits the condenser to be brought in immersion contact with the object slide or to be placed in any other position desired **without reference to the position of the upper Iris Diaphragm**. The lower section of the substage carries the **large Iris Diaphragm which is used below the condenser**. This diaphragm may be swung from under the condenser to the right of the instrument. It is so mounted that it may be rotated upon its own axis and is laterally movable by rack and pinion when oblique illumination is desired.



SUBSTAGE WITH PARTS SEPARATED TO SHOW CONSTRUCTION

The Professional Biologist's and Pathologist's Microscope

CCS. SPECIALLY ADAPTED FOR PHOTO-MICROGRAPHY

This microscope has large stage and base and has plenty of working distance between stage and arm—**important in photographing with low power objectives.** We regard the CCS as an eminently practical and desirable microscope for individual use, as it is adapted to the most difficult work. Although we now supply this stand with the new substage and other improvements, the price has been materially reduced. The New Revolving Mechanical Stage is readily substituted for the plain revolving stage. To effect the change it is only necessary to loosen the two centering screws and lift out the plain stage, substituting the other for it. We recommend the purchase of both stages wherever possible, as one is often required where the other is not at all suitable. The stand is of brass throughout, finely polished and lacquered. The base is of special horseshoe form, having the back claw extended to form a tripod support. The pillar is rectangular, extremely rigid, and the joint has clamping lock for securing the body at any desired angle. The substage is the New Complete Substage, as described on pages 18 and 19. The stage is revolving, has centering screws, and the surface is a plain hard rubber plate, which is vulcanized into the metal support (patented) in such a manner that is impossible for any warping or separation to take place. It has a **very large aperture** so that large sections (such as medulla) can be examined, projected or photographed with a low power objective, **and the whole section be in the field.** The **revolving and centering stage** of this stand allows of the revolving of diatoms, etc., and their thorough examination under different conditions of light, also of the **manipulation of the object for photo-micrography and for the most difficult search work.** The complete substage, with its racking out and revolving diaphragm, allows of extremely oblique illumination of the object from any meridian. The fine adjustment is by accurate micrometer screw acting on the triangular bearing of the arm, the construction being a new (patented) device whereby **all set-screws and springs are discarded** which, when employed, relax and wear so as to produce lateral motion or movement of the field, an extremely annoying and serious defect. The coarse adjustment is by diagonal rack and pinion of the utmost delicacy and precision, enabling the one-sixth inch objective to be easily focused with it alone. The main tube has nicked and graduated draw tube working in cloth-lined sleeve. The Abbe condenser 1.20 N. A., is a part of this stand.

Each CCS Microscope is furnished in a polished case with nicked handle and lock and with receptacles for accessories.

CCS1.	Stand CCS with 1 eyepiece, $\frac{2}{3}$ inch and $\frac{1}{8}$ inch objectives	\$90 00
CCS2.	CCS1 with double revolving nosepiece	95 00
CCS3.	Stand CCS with two eyepieces, $\frac{2}{3}$ inch and $\frac{1}{8}$ inch objectives	92 00
CCS4.	CCS3 and double revolving nosepiece	97 00
CCS7.	Stand CCS with 2 eyepieces, $\frac{2}{3}$ inch and $\frac{1}{8}$ inch dry, and $\frac{1}{12}$ inch oil immersion objectives	130 00
CCS8.	CCS7 and triple revolving nosepiece	137 50
	Price of Mechanical Stage for CCS Microscope, extra	35 00

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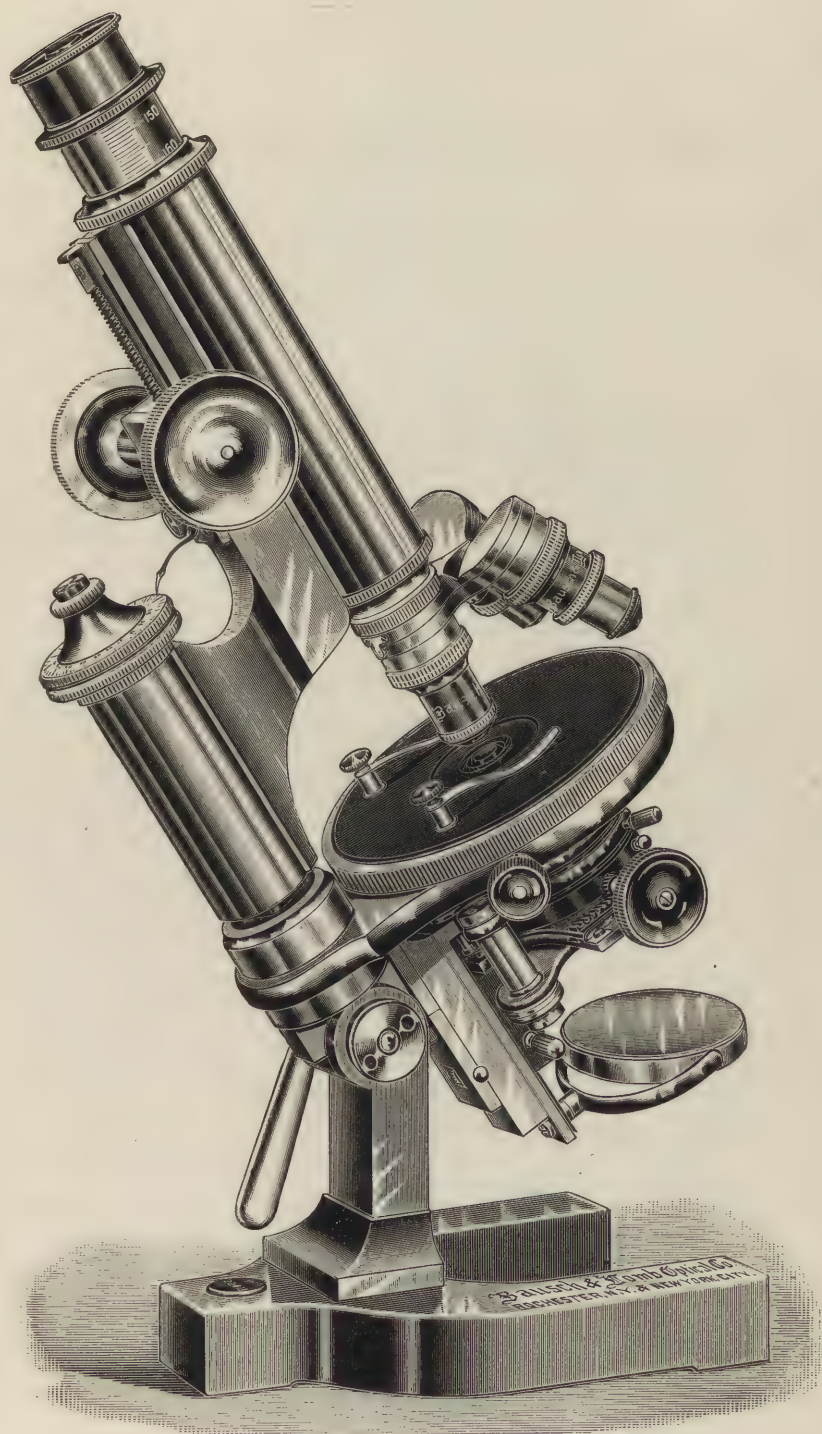


Figure one-half actual size

**CCS—PROFESSIONAL BIOLOGIST'S AND PATHOLOGIST'S
MICROSCOPE.—New Construction**

CHAS. LENTZ & SONS

The Grand Model Microscope

DS AND DDS

This microscope stand is an ideal instrument in the fullest sense of that word ; viz., perfect in design as far as the limitations of the human mind will permit, and perfect in construction as far as it is possible for human skill to perfect anything.

The stand is of the finest brass throughout, and is finished in the most appropriate manner in every part. The base, while of the horseshoe type, is extra heavy and has the back claw prolonged so as to virtually form a tripod base which is entirely stable in any position of the microscope. The pillar, consisting of two massive columns, supports the stage and arm in a manner particularly adapted to secure solidity and at the same time add grace to the instrument. **The stage is of unusually large size**, measuring 126 mm. in diameter, and is either fitted with vulcanite plate in the DS, or with mechanical stage in the DDS stands. In either case the stage is revolving and with centering screws, whereby the geometrical center of the stage may be made to accurately coincide with the optical axis of the objective. The mechanical stage supplied with the DDS stand is the same as that described on page 25, except that it is larger, to conform to the larger stand, and has both the stop against which the object slide rests and the movable finger adjustable and provided with graduations for record purposes. The heads of the centering screws are also provided with graduations and index and with a series of lines recording the number of revolutions of the screw. These **extra graduations** make this the only microscope made with revolving mechanical stage with which it is possible to accurately record the position of any given object in such a manner that it can be referred to again if the instrument shall have been used *ad interim* for other work. This is very important in projection work for class demonstration.

The mechanical stage is readily interchangeable with the plain revolving stage, as both are made to standard gauges. To effect the change it is only necessary to loosen the centering screws and substitute one stage for the other. The purchase of both stages is recommended, as the plain stage will often be required where the mechanical stage would not be, and *vice versa*.

The large body tube, especially constructed to permit a large cone of light to pass from the objective, as well as its complete adjustments, fits this stand for Photo-micrography.

The fine adjustment is the improved triangular bar adjustment, in which the movement is by micrometer screw of such accuracy and delicacy that there is absolutely no lost or lateral motion possible. In order to give increased delicacy in manipulation the head of the **micrometer screw is made extra large** and has a concavity at the apex in which to rest the index finger for greater steadiness. The circumference is graduated to 100 parts, permitting measurement of the thickness of objects under observation.

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The coarse adjustment is by diagonal rack and pinion, the advantage of the diagonal teeth being that much greater delicacy of movement is secured, together with greater lasting qualities, as three teeth engage at all times and with a shearing contact instead of in the jarring fashion as with the straight rack. The diagonal rack and pinion is entirely free from all back lash or lost motion. The main tube is of large size and has nickeled and graduated draw tube sliding in cloth-lined sleeve and taking standard gauge eyepieces. The sleeve-carrying draw tube is removable when using the stand for photography.

The substage is the New Complete Substage as described on pages 18 and 19

This microscope is made in two forms :

DS with Revolving Vulcanite Stage.

DDS with Revolving Mechanical Stage.

DS1.	Stand DS with 1 eyepiece, and $\frac{2}{3}$ inch and $\frac{1}{8}$ inch objectives . . .	\$130 00
DS2.	DS1 with double revolving nosepiece	135 00
DS3.	Stand DS with 2 eyepieces, $\frac{2}{3}$ inch and $\frac{1}{8}$ inch objectives	132 00
DS4.	DS3 and double revolving nosepiece	137 00
DS7.	Stand DS with two eyepieces, $\frac{2}{3}$ inch and $\frac{1}{8}$ inch dry, and $\frac{1}{12}$ inch oil immersion objectives	163 50
DS8.	DS7 and triple revolving nosepiece	171 00
DDS1.	Stand DDS with 1 eyepiece, $\frac{2}{3}$ inch and $\frac{1}{8}$ inch dry objectives . .	160 00
DDS2.	DDS1 with double revolving nosepiece	165 00
DDS3.	Stand DDS with 2 eyepieces, $\frac{2}{3}$ inch and $\frac{1}{8}$ inch objectives . . .	162 00
DDS4.	DDS3 and double revolving nosepiece	167 00
DDS7.	Stand DDS with two eyepieces, $\frac{2}{3}$ inch and $\frac{1}{8}$ inch dry, and $\frac{1}{12}$ inch oil immersion objectives	200 00
DDS8.	DDS7 and triple revolving nosepiece	207 50
DDS10.	Stand DDS with 4 eyepieces, 2 inch, $\frac{2}{3}$ inch and $\frac{1}{8}$ inch dry, and $\frac{1}{12}$ inch oil immersion, objectives and quadruple revolving nose-piece	222 00
DDS12.	DDS10 with Filar Eyepiece Micrometer, Stage Micrometer and improved Abbe Camera Lucida	290 00
	Plain revolving Stage for DDS, extra	10 00
	$\frac{1}{8}$ or $\frac{1}{4}$ will be substituted for $\frac{1}{8}$ if desired.	

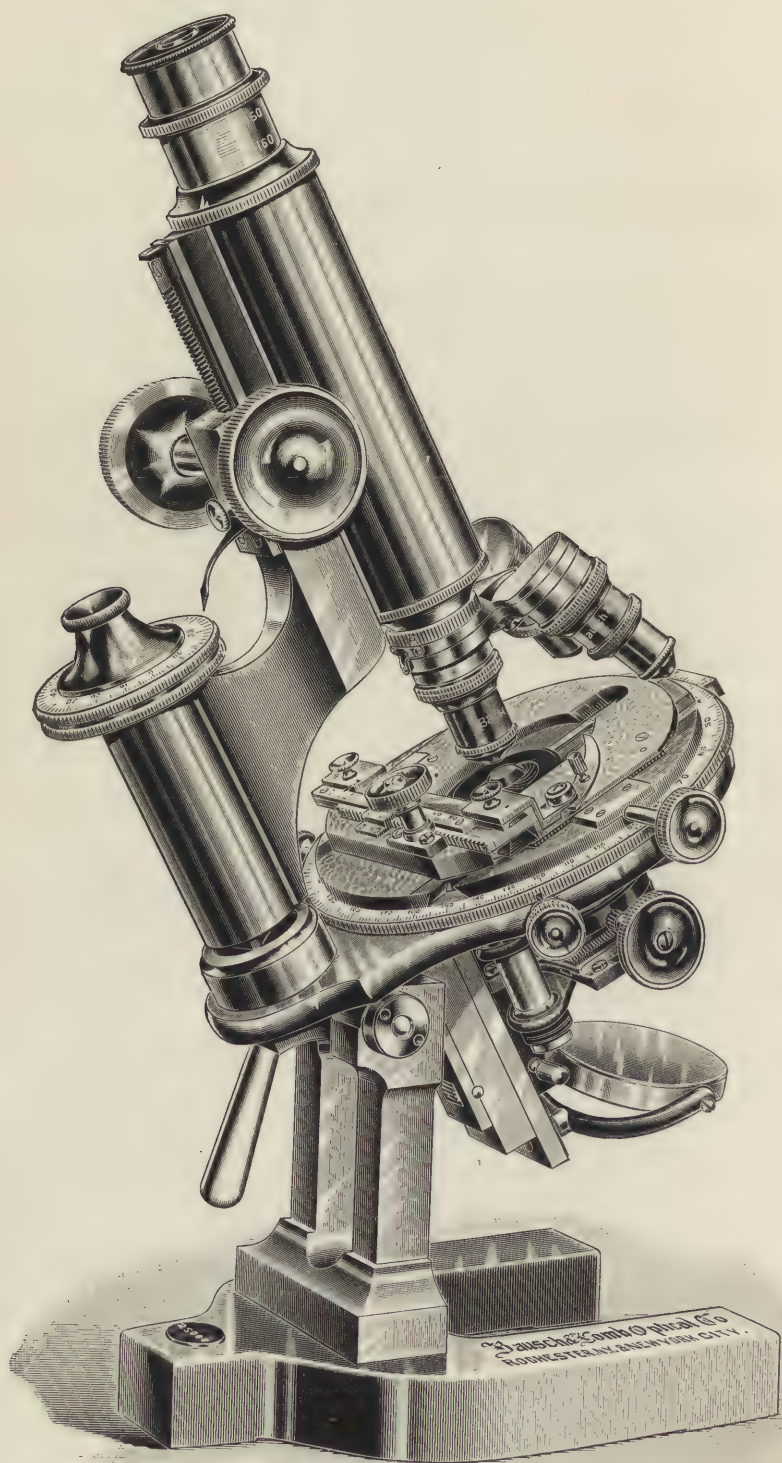
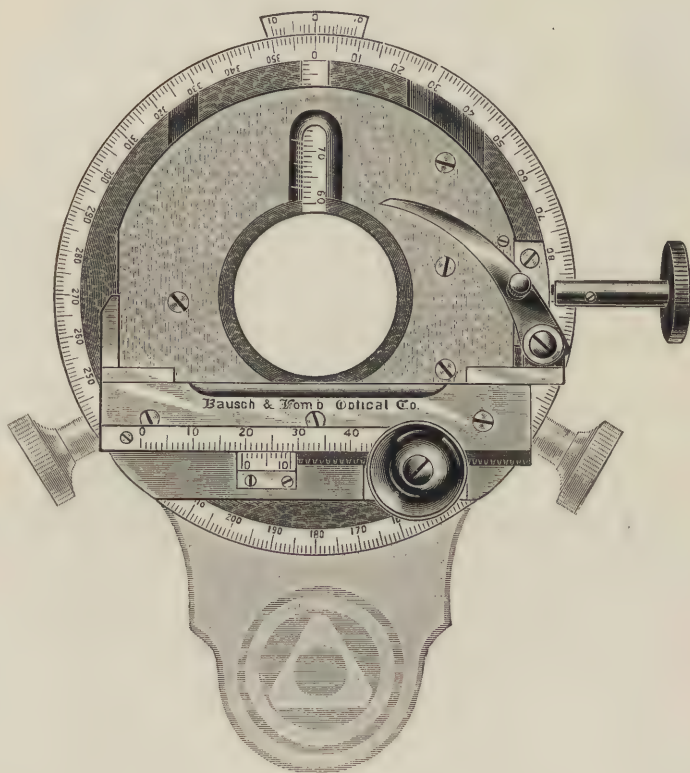


Figure one-half actual size
DDS—GRAND MODEL MICROSCOPE

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Revolving Mechanical Stage

NEW CONSTRUCTION



The Revolving Mechanical Stage can be supplied with the CCS Continental Microscope, and is supplied in a larger form and with extra graduations on centering screw heads with the DDS microscope as listed.

The rectangular movements and object carrier are the same in construction as those of the Attachable Mechanical Stage. The graduations are placed so as to be viewed conveniently and have verniers reading to tenths millimeter.

The entire stage rotates on its axis, the circumference being divided into 360° and provided with vernier reading to tenths of a degree.

The whole construction is one of the greatest solidity, combined with delicacy of movements and convenience for working.

CHAS. LENTZ & SONS

Achromatic Objectives

CORRECTED FOR 160 MM. TUBE LENGTH



THESE objectives are those supplied with all stands listed. **They are made by Bausch and Lomb Optical Company, Rochester, New York**, a firm whose reputation for the highest class of optical work is universal. They are specially corrected for us for medical microscopy and biology.

We believe that for working distance and penetration they are not equalled by any objectives of similar type. The flatness of field is very good and is all that can be desired, **while for definition** (the most important of all qualities required for medical work) **they are unexcelled by any other objectives of either domestic or foreign manufacture.**

The 1-12 oil immersion objective is worthy of special notice. It is manufactured after a new formula embodying optical glasses which do not deteriorate and is specially corrected for bacteriological work.

The numerical aperture is high (1.32) and as the chromatic and spherical aberrations are properly corrected and the amplifying power great, the resulting resolving power is excellent, rendering the objective exceptionally useful for biological work.

It has been remarkably well received and is highly advocated by the large number of prominent bacteriologists, biologists and physicians who have thoroughly tested its capabilities in daily laboratory use. It has made many converts from those who previously had solely depended on objectives of foreign manufacture.

We confidently invite comparison of this objective with the best of other manufacture and will cheerfully send it for examination to responsible parties under conditions as stated under notice, page 3, § 3.

We are quite confident that these objectives have no equal at the price and that they are unexcelled by many which are much higher in cost and are more pretentious.

Every single part of these objectives is tested and **re-tested many times** before and after assembling by different skilled mechanics and opticians, it is therefore impossible for a faulty objective to leave the factory, and they are again examined by us before shipment from Philadelphia.

PHILADELPHIA

Achromatic Objectives

SUPPLIED WITH LISTED OUTFITS. CORRECTED FOR COVER GLASSES,
OF 0.16 MM. THICKNESS (No. 2)

No.	EQUIVALENT FOCUS.			Aperture.	Initial Magnification.	Price.
	Inches.	Millimeters.				
2000	3	75	Dry.	0.8	33	\$6 00
2002	2	50	"	0.10	5	6 00
2004	1½	37	"	0.14	6.8	6 00
2006	1	25	"	0.18	10	6 00
2008	¾	17	"	0.25	15	6 00
2010	½	12.5	"	0.36	20	8 00
2012	¼	6.3	"	0.77	40	10 00
2014	⅓	5	"	0.82	50	12 00
2016	⅕	4.2	"	0.82	59	12 00
2018	⅛	3.2	"	0.85	78	12 00
2020	⅙	2.5	Oil Immersion.	1.25	100	30 00
2022	⅙	2.1		1.32	119	38 00
2024	⅙	1.6		1.32	156	54 00

Fitting Iris diaphragm to objectives for work in photo-micrography . . . \$6 00

Eyepieces

of Huyghenian construction, supplied with all stands. They have been recently recomputed, making the focal plane correspond with the upper end of the tube, the *image remaining in focus* regardless of the change of eyepiece. The optical tube length, therefore, remains constant, an important feature in estimating the magnifying power of the combinations.

The field is large and flat, giving excellent definition, extreme care being employed in making and fitting every part. The eye lens is so mounted as to prevent disturbing reflections. They are corrected for 160.0 mm. tube length.



CAT. NO.	EQUIVALENT FOCUS.		Magnification. Diameters.	Price.
	Inches.	Millimeters.		
2026	2	50	5	\$2 00
2028	1½	37	7	2 00
2030	1	25	10	2 00
2032	¾	18	14	2 00
2034	½	12.5	20	2 00

Linear Magnifying Powers of Objectives and Eyepieces

IMAGE DISTANCE 250.0 MM.—TUBE LENGTH 160.00 MM.

OBJECTIVES.		EYEPIECES.				
		2 In.	$\frac{1}{2}$ In.	1 In.	$\frac{3}{4}$ In.	$\frac{1}{2}$ In.
		50 mm.	40 mm.	25 mm.	18 mm.	12 mm.
Inch.	mm.					
3	75.0	11	16	21	28	35
2	50.0	16	22	30	40	54
$1\frac{1}{2}$	37.0	23	33	44	56	70
1	25.0	30	41	53	69	85
$\frac{2}{3}$	17.0	55	74	96	130	165
$\frac{1}{2}$	12.5	88	120	155	200	265
$\frac{1}{4}$	6.3	190	260	355	455	560
$\frac{1}{5}$	5.0	230	315	410	550	710
$\frac{1}{6}$	4.2	265	340	450	585	750
$\frac{1}{8}$	3.2	345	460	590	770	980
$\frac{1}{12}$	2.1	580	810	1060	1400	1760
$\frac{1}{15}$	1.6	820	1100	1420	1860	2350

Above magnifications can be **considerably** increased by lengthening the draw tube or by inserting an achromatic amplifier in the society screw provided in draw tube.

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Apochromatic Objectives

SUPPLIED WITH LISTED OUTFITS AT EXTRA COST, WHEN SPECIALLY ORDERED

No.	Foci.		Aperture.	Initial Magnifying Power.	Type.	Price.
	Millimeters.	Inches.				
2036	38	1½	0'10			\$ 15 00
2038	16.0		0'30	15.5	Dry	32 00
2040	8.0		0'60	31	"	40 00
2042	5.0		0'95	50	"	48 00
2044	4.0		1'25	62	Water Imm.	56 00
2046	3.8		1'30	66	Oil "	110 00
2048	3.5		1'40	70	" "	150 00
2050	2.0	1½	1'30	125	" "	120 00
2052	2.0	1½	1'40	125	" "	160 00

COMPENSATING OCULARS

No.	Use.	Series No.	Foci.		Price.
			Millimeters.	Inches.	
2054	Finder Ocular and Photog- raphy	2	100'0	4	\$ 8 00
2056	General Work	4	50'0	2	8 00
2058	General Work, specially use- ful on Bacteria	6	38'00	1½	8 00
2060	General Work	8	25'0	1	12 00
2062	Highest Resolving Power .	12	17'0	¾	12 00
2064	Focusing Ocular	16	12'0	½	10 00

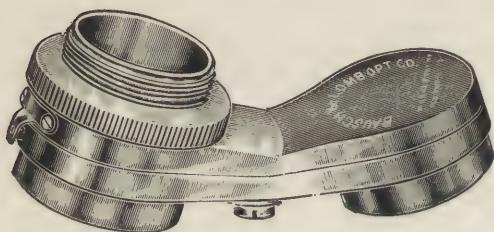
PROJECTION OCULARS

No.		Series No.	Foci.		Price.
			Millimeters.	Inches.	
2066	With Adjustment and Gradu- ation	2	100'00	4	\$ 16 00
2068	With Adjustment and Gradu- ation	5	38'00	1	16 00

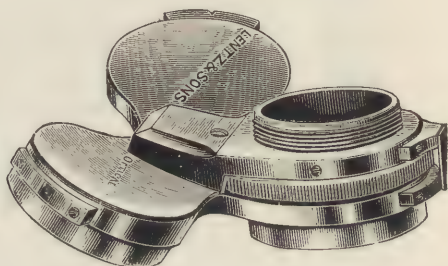
These objectives, computed by Prof. Chas. S. Hastings, Yale University, contain **no fluorite**, and are made throughout of **absolutely permanent materials**. They are not kept in stock and are supplied to order only.

Revolving Nosepieces

The Revolving Nosepieces herewith listed are recommended for use with every microscope where more than one objective is employed. They are constructed after new and improved methods and are extremely accurate and not liable to get out of center. When the nosepiece is ordered with the microscope the objectives are centered to it gratis. All objectives of one-inch focus, or less, will be mounted so that when attached to the nosepiece they will focus in the same plane if ordered with a nosepiece, otherwise they will require slight adjustment to bring them successively in focus.



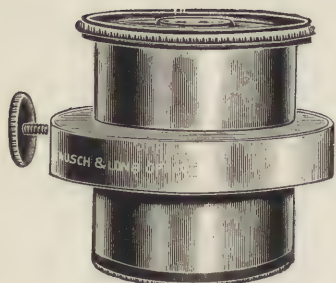
No. 2070.
DOUBLE NOSEPIECE.



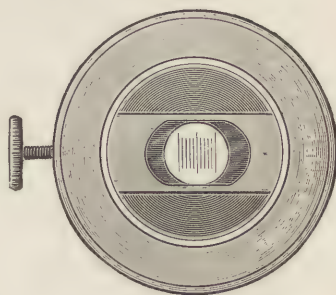
No. 2072.
TRIPLE NOSEPIECE.

2070.	Nosepiece, double, nickel plated	\$5 00
2072.	Nosepiece, triple, nickel plated	7 50
2074.	Nosepiece, quadruple, nickel plated	12 00

Micrometers



No. 2076.
MICROMETER EYEPIECE WITH
MOVABLE SCALE.



SECTIONAL VIEW OF NO. 2076, SHOWING
ARRANGEMENT OF MOVABLE SCALE.

Micrometers

- 2076. Micrometer Eyepiece**, with movable scale **\$12 00**

This micrometer consists of an eyepiece of 25 mm. focus, having a scale ruled on a polished glass plate and movable laterally by means of a screw with milled head. The eye lens is adjustable by sliding tube to suit the focus of different eyes. The scale being movable is easily placed so that the line from which the counting is started will exactly coincide with the margin of the object to be measured.

- 2078. Micrometer Eyepiece**, with fixed scale **5 00**

A micrometer scale ruled on a polished glass disc, is cemented to the diaphragm of an Eyepiece, of 25 mm. focus, the eye lens of which is mounted in a sliding tube in order that it may be focused sharply on the scale and its focus adjusted to suit the focus of different eyes.

- 2080. Eyepiece Micrometer**, round glass disc, divisions of $\frac{1}{10}$ mm. fitted to any eyepiece **1 50**

- 2082. Filar Eyepiece Micrometer**, large size. **45 00**

In this eyepiece a cross hair is moved laterally across the object in field by an accurate micrometer screw. The enlarged head of the screw is graduated and the number of revolutions are also recorded.

- 2084. Stage Micrometer**, on glass slip, 3 x 1 inch, divisions of $\frac{1}{10}$ and $\frac{1}{100}$ mm., in velvet-lined case **3 50**

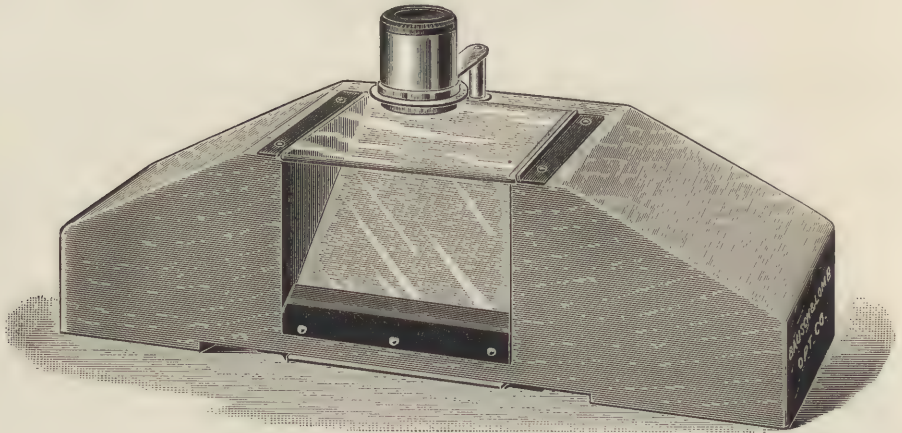
- 2086. Stage Micrometer**, on glass slip, 3 x 1 inch, divisions of $\frac{1}{10}$ and $\frac{1}{100}$ inch, in velvet-lined case **2 00**

- 2088. Stage Micrometer**, on glass slip, 3 x 1 inch, divisions of $\frac{1}{100}$ and $\frac{1}{1000}$ inch, in velvet-lined case **2 50**

CHAS. LENTZ & SONS

Barnes' Dissecting Microscope

T AND TT



An extremely popular microscope, designed by Professor Charles R. Barnes, University of Wisconsin.

The body of the microscope is of neatly finished wood, the sides being shaped to form hand rests. The lenses are carried in a metal lens arm, movable above the stage, and are readily focussed by a vertical movement of the arm, which is nicely adjusted in a metal sleeve.

A metal plate is supplied for black and white background.

This microscope has been furnished to hundreds of schools for elementary botanical and zoological work.

- T1.** Stand as shown in figure, with one Doublet Lens, any power \$2 50
- T2.** Stand as shown in figure, with two Doublet Lenses, any power 3 25
- TT1.** Stand as above, but with iron base, forming receptacle for dissecting instruments, etc., and with one Doublet Lens, any power 3 00
- TT2.** Stand as above, but with iron base, forming receptacle for dissecting instruments, etc., and with two Doublet Lenses, any power 3 75
- Coddington Lenses, mounted for T and TT stands, each 1 50

DOUBLET LENSES FOR DISSECTING MICROSCOPES

These lenses consist of two lenses in fixed mounting of suitable form to be used with the various dissecting stands, and are intended to take the place of the simple lenses, as they give larger and flatter field, better definition, and longer working distance, and are supplied at the same price.

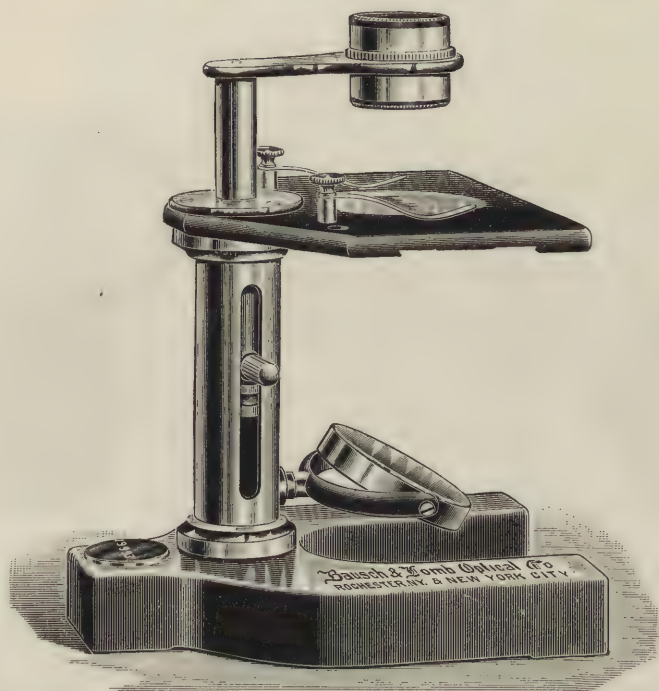
No.	Magnification.	Focus.	Price.
1	7	1 1/2 in.	\$0 75
2	10	1 in.	75
3	15	3/4 in.	75
4	20	1/2 in.	75
5	40	1/4 in.	75



The diameter of the mountings of these lenses is one inch. Doublet Magnifier Nos. 1 to 5

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U—Educational Dissecting Microscope



The demand for a dissecting stand embodying all the necessary conveniences and at the same time of moderate cost, led to the construction of the Educational Stand, and the great popularity it has attained has justified improving it to meet still more the requirements of advanced methods. The base of the stand is of japanned metal and very heavy, insuring stability. All other parts are heavily nickered, preventing erosion by reagents. The stage is of large size, and the opening is provided with a glass disc.

The lenses are carried by a metal arm, movable above the stage, and are focussed by means of the knob shown at the side of the pillar, in the engraving, this method being entirely satisfactory for lenses of the powers used. We list the U stand with the Triplet, Coddington and Doublet Lenses, but would advise the purchase of the Triplets or Coddingtons wherever funds will permit, on account of their superior defining power. Each U microscope is furnished in a neat wooden case.

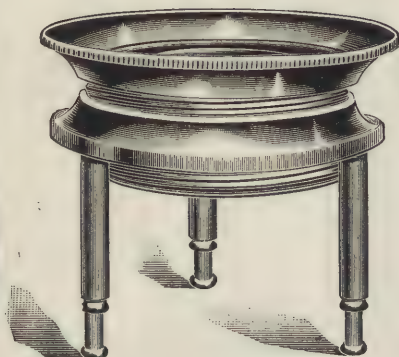
Metal Hand Rests are applicable to all the U stands, and are furnished at an extra cost.

U1.	Stand U in case, no lenses	\$ 6 00
U2.	Stand U with Metal Hand Rests, no lenses	7 25
U3.	U1 with one Doublet Lens, any power	6 75
U4.	U1 with two Doublet Lenses, any power	7 50
U5.	U1 with one Coddington Lens, any power	7 50
U6.	U1 with two Coddington Lenses, any power	9 00
U7.	U1 with one Aplanatic Triplet Lens, any power	9 50
U8.	U1 with two Aplanatic Triplet Lenses, any power	13 00
	Glass disc with millimeter rulings for stage, each	50

Pocket Magnifiers, etc.



No. 2092



No. 2090



No. 2094

2090. Simple Microscope, on Brass Tripod \$0 50

This microscope has a large lens of about 1 inch focus, mounted in a brass rim, which is adjustable for focus by a screw in the frame, and which in turn is supported on three legs. It is a very convenient instrument for elementary work in botany, etc., and for counting colonies of bacteria in Petri dishes.

2092. Magnifiers, Folding, oval shape, in rubber case, with 1 lens.

Diam. of lens . . .	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2 inches.
Price, each . . .	\$0.30	.40	.60	.70	.90	1.15

2094. Magnifiers, Folding, oval shape, in rubber case, with 2 lenses.

Diam. of lens .	$\frac{5}{8}$ & $\frac{3}{4}$	$\frac{7}{8}$ & 1	$1\frac{1}{8}$ & $1\frac{1}{4}$	$1\frac{1}{2}$ & $1\frac{3}{4}$	$1\frac{3}{4}$ & $1\frac{7}{8}$	$1\frac{7}{8}$ & 2 inches.
Price, each .	\$0.50	.65	.85	1.10	1.65	2.15

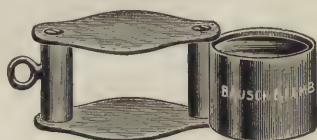
2096. Magnifiers, folding, bellows shape, in rubber case, with 3 lenses.

Diam. of lens	$\frac{1}{2}$, $\frac{5}{8}$ & $\frac{3}{4}$	$\frac{5}{8}$, $\frac{3}{4}$ & $\frac{7}{8}$	$\frac{3}{4}$, $\frac{7}{8}$ & 1 inch.
Price, each	\$0.80	1.00	1.30

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Magnifiers, etc.

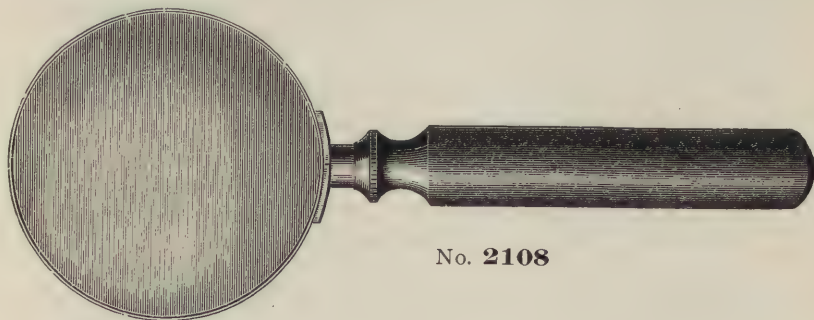
The Hastings Aplanatic Triplets, computed after a new formula, **have large angular field**, are free from color errors **and have a long working distance**. The series has been designed from the new optical glasses. For use as a pocket lens, the powers 6.7 and 10 are especially recommended, the first, perhaps, superior in general utility, and the second a more convenient size. The lenses are mounted in a very neat case of German-silver. When desired for the dissecting microscope, they will be furnished in suitable mounting without extra cost.



HASTINGS APLANATIC TRIPLET

The finest grade of pocket lens

NO.	MAGNIFICATION.	FOCAL LENGTH.		REAL FIELD MM.	PRICE.
		Inches.	Mm.		
2098	5	2	51.0	40.0	\$7 00
2100	6.7	1½	38.0	30.0	7 00
2102	10	1	25.0	20.0	7 00
2104	15	¾	19.0	14.0	7 00
2106	20	½	13.0	7.5	7 00



No. 2108

2108. Reading Glasses, nickel plated rims and black enameled wood handle.

Diam. of lens, 2 2½ 3 3½ 4 4½ 5 5½ 6 inches.

Price, each, **\$0.80 1.00 1.50 2.00 2.50 3.25 4.00 5.00 6.00**

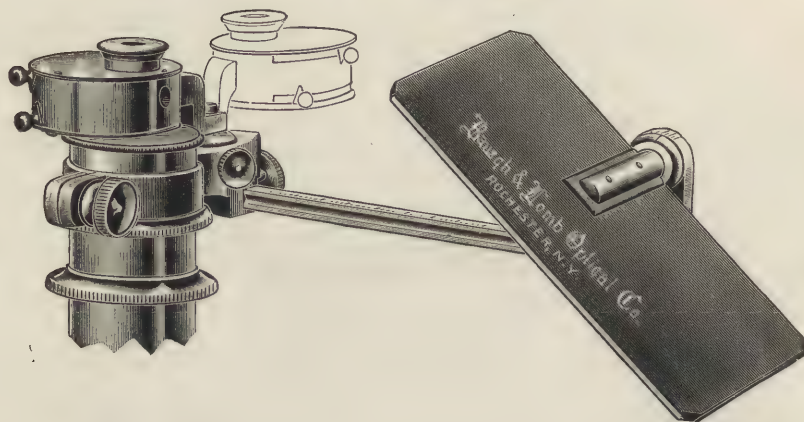
2110. Reading Glasses, gold-plated rims, white or oriental pearl handles.

Diam. of lens, 2½ 3 3½ 4 4½ 5 5½ 6 inches.

Price, each, **\$3.00 3.50 4.00 5.00 6.00 7.00 8.50 10.00**

CHAS. LENTZ & SONS

Camera Lucidas



No. 2112. ABBE CAMERA LUCIDA, AS APPLIED TO MICROSCOPE TUBE
Prism carrier shown in outline thrown back as when not in use

2112. Abbe Camera Lucida, New Improved Form \$20 00

This Camera Lucida presents a number of important improvements over the older forms, although the optical principle remains the same, viz.: The image of the paper and pencil point is superimposed upon the image of the object by means of an adjustable mirror and an Abbe's Prism, so that the object and pencil point are seen together.

The Abbe Prism is mounted in a cylindrical closed box, so constructed that it may be rotated about an axis, thus bringing the prism over the eyepiece of the microscope (which position is indicated by a pronounced click), or carrying it entirely out of the way of the observer.

In using the Camera Lucida, it rarely happens that the proper relative illumination exists between the drawing paper and the object, owing to the varying amount of light transmitted by objectives of different foci. With high-power objectives, the paper is apt to appear too bright and thus drown the image of the object, the reverse occurring with low powers.

To correct this difficulty, a series of moderating glasses is arranged to rotate between the prism and the mirror and between the prism and the objective, being operated by the knobs shown at the side of the prism carrier. By means of the two sets of glasses a perfectly clear image of both pencil point and object is obtained with any combination of eyepiece and objective.

The whole prism arrangement is provided with a centering device, acting on the axis of the prism carrier and moved by two milled heads conveniently placed. By this device the prism may be centered to the eye lens of the microscope, thus securing equal illumination and sharp definition over the entire field.

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The mirror is of unusually large size, giving an increased field, and is attached by a graduated axis to the arm.

The mirror arm is graduated on its upper surface in centimeters and is adjustable in the mounting so that it may be brought as close as desired to the prism, extending a distance of 125 mm., or removed entirely.

Another feature of importance is the attachment of the camera to the microscope by means of a collar with binding screw. The collar slips over the tube of the microscope and thus permits the placing of the prism at the proper distance from the eye lens of the eyepiece.

No camera lucida can be used with more than one or two eyepieces, which is not provided with a means of adjusting it to the focus of the eye lens of the microscope.

This camera having such adjustment, can be used with all our eyepieces with equally good results.

The eyepiece can be removed and others substituted without disturbing the camera.



No. 2114. ABBE CAMERA LUCIDA, AS APPLIED TO MICROSCOPE TUBE

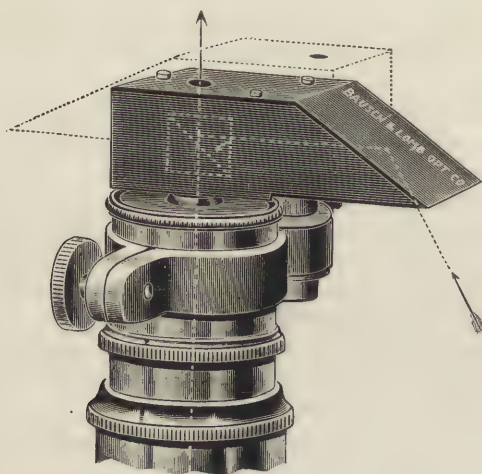
2114. Abbe Camera Lucida, simpler form \$12 00

This Camera Lucida embodies the same optical construction as the No. 2112, the Abbe prism, mirror and mirror bar being of the same dimensions.

The prism carrier is arranged to swing back from the eyepiece by means of a hinge joint. The proper modification of the light is secured by colored glasses of different shades, which are slipped into slots between the mirror and prism or between the prism and eyepiece as desired.

The prism carrier is attached to the eyepiece by two capstan-head screws, passing through slots, by which the prism may be centered to the eye lens of the microscope.

This camera may be used with any power eyepiece of the compound microscope.

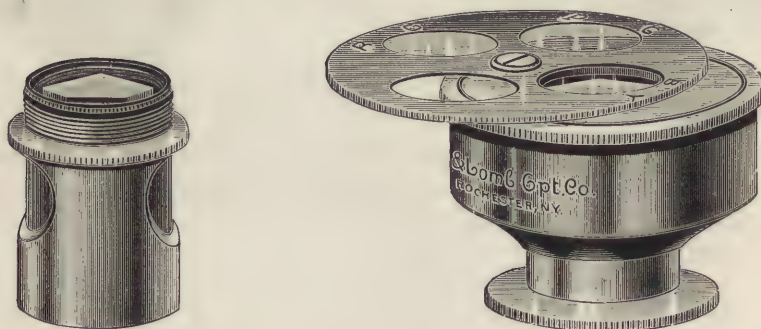


No. 2116. ABBE CAMERA LUCIDA

This is a more simplified form of the Abbe Camera Lucida in which, while the Abbe Prism is used as in the large Abbe Camera Lucida, the mirror is reduced in size and is fixed. The prism and mirror are contained in a neat mounting which is attachable to the microscope tube by a clamping ring, and which may be swung back out of the way of the eyepiece, as shown in the figure.

2116. Abbe Camera Lucida, modified form \$8 00

Polariscope



2118. Polariscope, with large square face Nicol prisms, in case . . . \$25 00

The polarizer is fixed in brass mounting and rotated by a large milled head. Polarizer has three selenites mounted in a revolving disk, having one clear Aperture. Analyzer is arranged in brass mounting and can be revolved. It has society screw and can be attached to the nosepiece of the microscope.

Microtomes and Apparatus for Microtomy.

LABORATORY MICROTOMES

The long experience of the manufacturers in the construction of microtomes and the large number which have been made, has enabled the defects to be overcome that are inherent in most of the forms, and improvements to be added which permit work of the utmost precision to be done, with a comfort and facility not possible in other constructions.

The movable parts are fitted with an exactness never surpassed in the construction of a microtome, and superior to that of most of the forms offered as first class. In addition to the other new features, one important innovation has been introduced, of rounding off the corners of the instrument, thus making it not only pleasant to handle, but obviating the liability of abrading the skin when working, which is of considerable importance where infectious material is to be handled. The unpolished parts are heavily enameled, and the finished portions nickeled to prevent rusting.

The Microtomes may be described as consisting of three parts :

The Stand, consisting of the Base, the curved Arm and the horizontal V-shaped Bed,

The Knife Block, which carries the knife, and

The Carriage, adjustable on the vertical portion of the stand, and carrying the Object Clamp, and the entire Feed Arrangement.

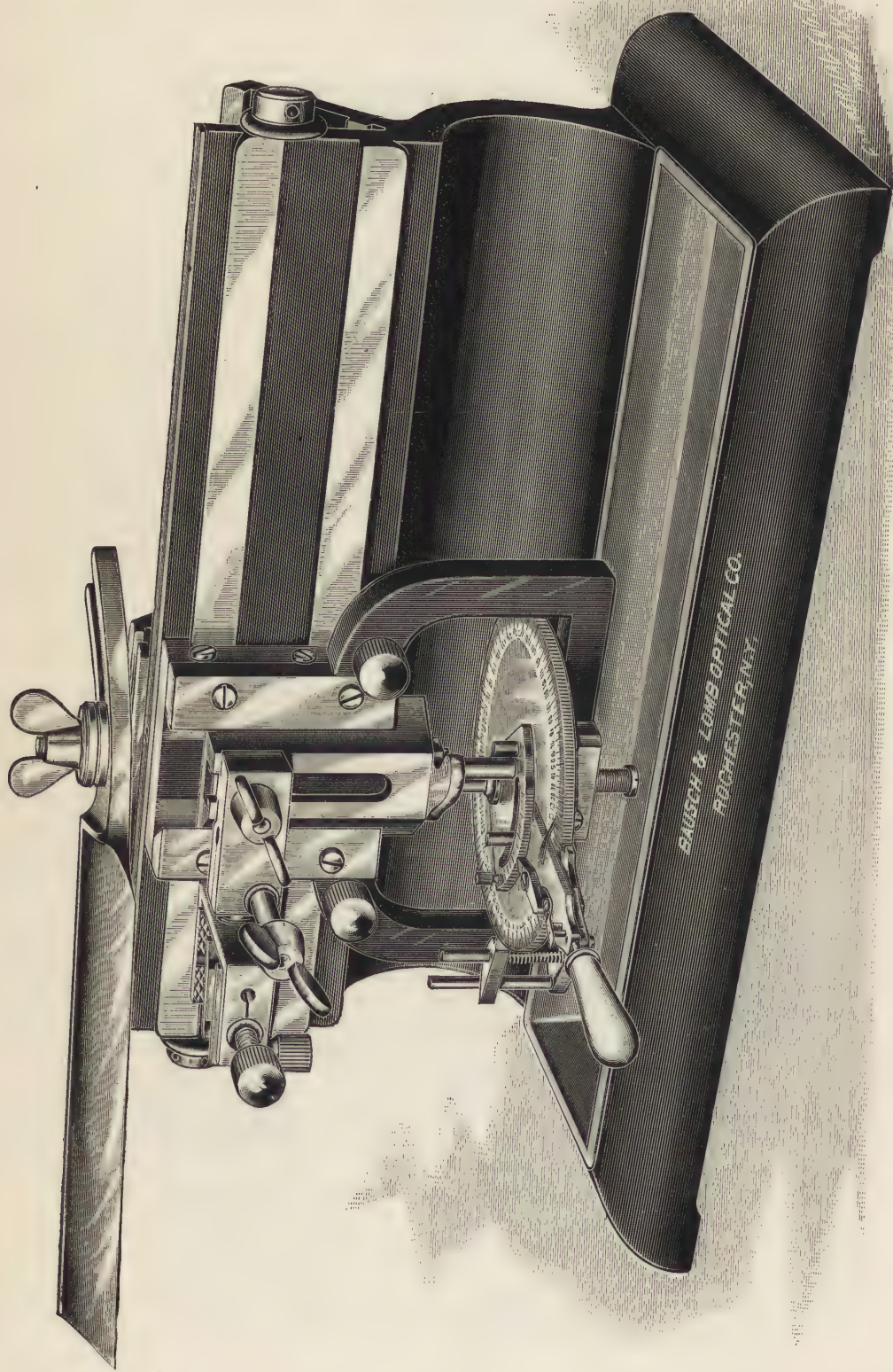
The Stand is of one solid casting, which insures absolute rigidity of all the parts.

Removable metal pan in the base collects the drip from the knife.

The Knife Block, carrying the knife, slides on three narrow, perfectly parallel plane surfaces, is triangular in section and of **unusual length**, to insure perfect uniformity of motion when cutting, and to prevent the possibility of any vertical or lateral displacement of the knife, even when cutting very hard substances, and securing the minimum of friction compatible with these qualities. The knife is clamped to the upper surface of the block by a thumb screw which slides in a T-shaped groove, extending along the entire upper side of the block. This arrangement permits the adjustment of the knife to any angle with the object, and to any position on the block. Each block is carefully fitted to the bed, and works with extreme delicacy and regularity of movement.

The Carriage is a stirrup-shaped solid casting, movable on a perfectly fitted V slide along the whole length of the front of the Microtome Stand. It can be clamped perfectly rigid at any point by means of the thumb screws at either side. The movable feature of the carriage is a very important one, as it enables the object to be perfectly adjusted to the knife, and permits the use of the whole edge of the knife. No other Microtome made is provided with this convenience.

It will thus be seen that this Microtome is adapted for both celloidin and paraffine work, including serial sectioning.



No. 2120. LARGE LABORATORY MICROTOME
Fitted with Universal Clamp and Knife

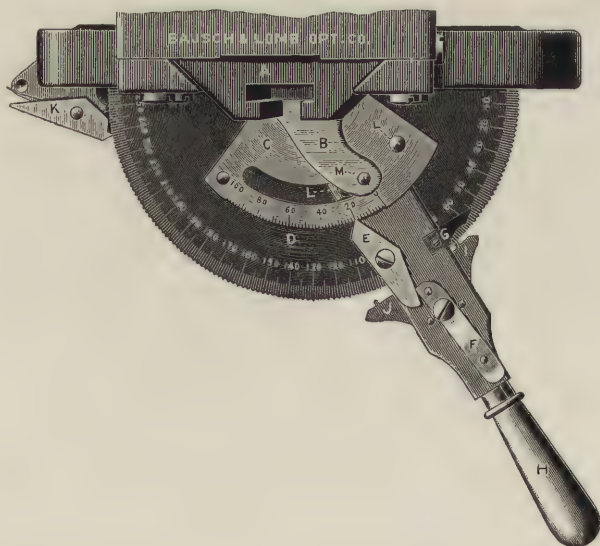
LARGE LABORATORY MICROTOME—DESCRIPTION.

The object clamp is carried on an arm which is fitted to a slide in the carriage and is constructed with special reference to convenience of manipulation.

The arm carrying the entire object clamp is arranged to slide vertically in a groove in the front of the slide piece, allowing the object to be rapidly elevated or depressed with reference to the knife, regardless of the position of the micrometer screw.

The feed arrangement is by micrometer screw, working in an adjustable block in the lower part of the carriage, and acting on the base of the slide piece. The screw is cut with the utmost care and accuracy, the pitch of the threads being 0.5 mm. The disk of the micrometer screw is graduated to 500 parts. On the margin, notches are cut of such size that one notch corresponds to two of the divisions on the disk.

Feed mechanism. The method of regulating the thickness of sections offers advantages not possessed by any microtome of similar type. It is readily set for thickness and the motion is definitely limited, thus permitting the successive cutting of sections to any extent without variation in thickness and without being dependent upon an audible click or reading the graduation, although permitting the latter if desired. By this arrangement the whole attention can be given to the cutting proper, thus obtaining much more perfect results, especially in serial and very thin sectioning, and saving a great deal of time. The finest feed is 2 micra.



FEED MECHANISM OF LARGE LABORATORY MICROTOME

LARGE LABORATORY MICROTOME—DESCRIPTION.

A represents the slide piece with projecting arm B, from the end of which a heavy stud M projects downward. C is a quadrant pivoted to the lower side of the arm B and slotted to receive a stud projecting from the main feed lever H. The quadrant bears a scale one division of which corresponds to two divisions on the head of micrometer screw D and the edge is toothed to correspond with the graduations. The main feed lever H is pivoted at its proximal end at the same point as the quadrant so as to move with it when desired.

It bears a pointer G, and a pawl E, which engages the teeth on the margin of the quadrant, and the small lever, F, which controls pawl E. In use, F is brought to a central position on H, releasing E. E is then set at the graduation indicating the thickness of section desired, stop L being held against the stud M meanwhile. F is then moved to the right clamping E firmly in position, and at the same time causing the pawl I to engage the teeth of D. A movement of the lever H to the right will now cause the quadrant and also the micrometer screw to rotate until the stop L' strikes the stud M, which is stationary. The distance moved will be equal to the arc indicated between zero on the quadrant and the graduation at which E is set. H being returned to the left until L strikes on M, I does not engage the teeth of D, and D is prevented by the brake K from rotating backward. It will thus be seen that the feed being set, a simple movement from left to right elevates the object the exact distance required, without the possibility of going beyond the limit and raising it too much.

All the movable parts of the Microtome should be kept as free from dust as possible, and well lubricated with dental or clock oil only.

The knives furnished are **hand-forged**, and are manufactured **in our own workshops** for Bausch & Lomb Optical Company, from the best English steel, and are guaranteed of the proper temper and hardness for microtome work. They are furnished properly sharpened for cutting, but, of course, should be gently stropped before using. Special care is taken in their manufacture, and each knife is thoroughly examined, tested and retested before leaving our factory. They are ground and polished by original and novel machinery, guided by trained mechanics, so that **perfect straightness and parallelism of the cutting edge, shank of knife, and bed are assured**. The hardening is done by a **special and expensive process**. **Our knives are not equalled by any of foreign manufacture.**

They are in use in a very large number of laboratories in all parts of the United States, and we have received several excellent testimonials from men who have had them in use for years.

Wherever we have placed these microtomes we have **invariably** been informed that they are by far the best our customers have ever used.

We have special facilities for accurately regrinding and honing microtome knives of any manufacture, shape or size, and would warn our customers from having microtome or other knives **reground** by inexperienced parties, as the hardness and temper of a knife can be ruined in a few seconds by an inexperienced workman, and it cannot afterwards be rehardened and is incapable of receiving a keen edge.

PHILADELPHIA

Laboratory Microtomes

LARGE SIZE

The dimensions of the Laboratory Microtome, large size, are as follows :

Length of Bed	312 mm.
Height	208 mm.
Vertical Movement of Object by Micrometer Screw	20 mm.
Vertical Adjustment of Object by Clamp	46 mm.
Diameter of Head of Micrometer Screw	90 mm.
Graduations on Head of Micrometer Screw	500
Pitch of Micrometer Screw	0.5 mm.
Finest Degree of Feed	2 micra.
Length of Cutting Edge of Knife	156 mm.

- 2120. Large Laboratory Microtome** with Universal Clamp and
Knife with 156 millimeter cutting edge **\$60 00**

- 2122. Automatic Feed Attachment,** **15 00**

This attachment is applicable only to the large and medium Laboratory Microtomes, which are provided with the Lever Feed.

- 2124. Knife Clamp,** for rigidly clamping microtome knives at the back, **\$5 00**

MEDIUM SIZE

The dimensions of the Laboratory Microtome, medium size, are as follows :

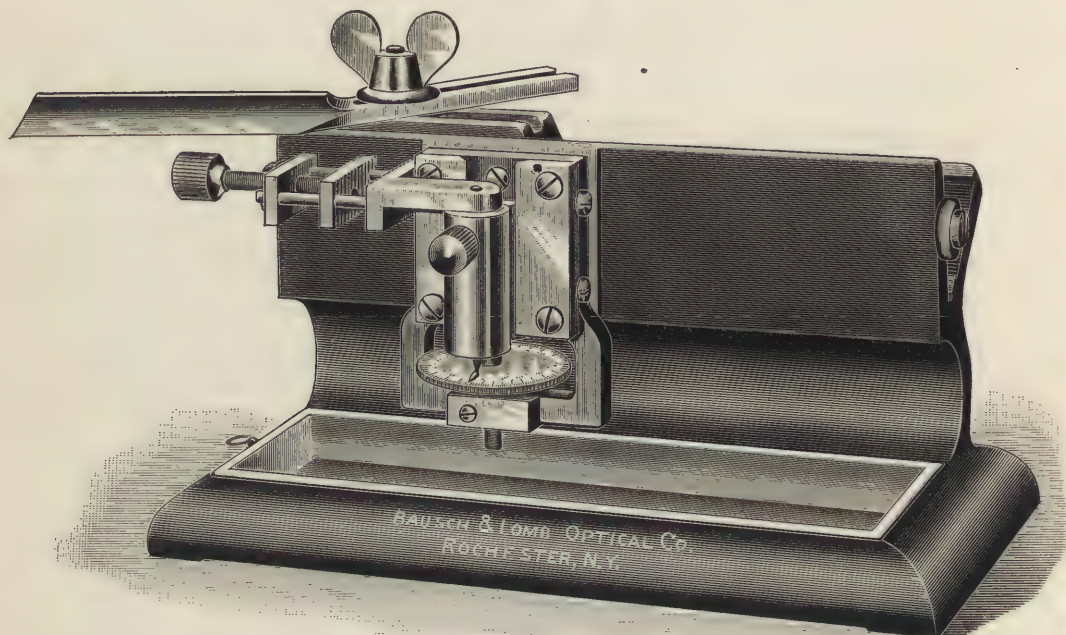
Length of Bed	234 mm.
Height	156 mm.
Vertical Movement of Object by Micrometer Screw	13 mm.
Vertical Adjustment of Object by Clamp	33 mm.
Diameter of Head of Micrometer Screw	78 mm.
Graduations on Head of Micrometer Screw	500
Pitch of Micrometer Screw	0.5 mm.
Finest Degree of Feed	2 micra.
Length of Cutting Edge of Knife	104 mm.

- 2126. Medium Laboratory Microtome,** with Universal Clamp and
Knife with 104 millimeter cutting edge **\$50 00**

- 2128. Polished Cherry Case,** with handle and lock and receptacle
for knife case **5 00**

CHAS. LENTZ & SONS

Small Laboratory Microtome



Cut one-half actual size.

NO. 2130. SMALL LABORATORY MICROTOME WITH KNIFE AND SIMPLE CLAMP.

This microtome cannot be excelled for physicians' use; also for use in the smaller hospital laboratories. It is a thoroughly practical microtome in every way.

The frame is of one solid casting, which forms the broad, firm base, the curved arm and the bed in which the knife-carrying block slides, thus securing the maximum of rigidity and at the same time the most convenient form.

The knife is carried on a solid block, triangular in section, 78 mm. long, which slides on three narrow, perfectly parallel plane surfaces in the V-shaped bed. The knife is held firmly on the block by means of a sliding thumb screw, which works in a T-shaped slot in the upper surface of the block. This form of block insures a perfectly even motion for the knife, absolute rigidity, and the minimum of friction compatible with these qualities. At the same time, the knife can be set at any desired angle to the object. The unusual length of the block prevents the knife from giving when cutting very hard substances.

The object carrier consists of a strong clamp attached to a slide piece. The clamp has lateral (right and left) and vertical adjustments for bringing the object into proper relation to the knife, the object being held between corrugated metal jaws, which are opened and closed by means of a strong thumb screw.

The slide piece is fitted with the utmost accuracy in the vertical slide, so that the object is moved in a plane exactly at right angles to the plane in which the knife moves, and with no liability to give way under the pressure of the knife.

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The micrometer screw works in a block which is provided with an arrangement for taking up any possible wear.

The knife is the same quality as supplied with the large laboratory microtome, and is manufactured by the same process in our own factory. It is not equalled by any of European manufacture.

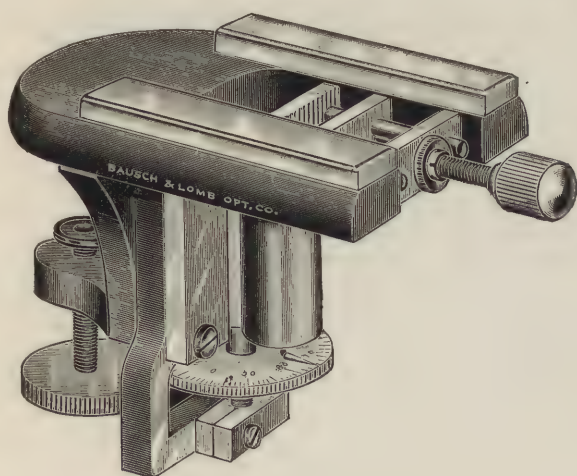
The dimensions of the Microtome are as follows :

Length of Bed	208 mm. (8 inches).
Total Height	130 mm. (5 inches).
Limit of Adjustment of Micrometer Screw .	18 mm. ($\frac{3}{4}$ inch).
Limit of Vertical Adjustment of Clamp . .	26 mm. (1 inch).
Diameter of Graduated Disc	45 mm. (2 inches).
Pitch of Screw	0.5 mm.
Graduations on Head of Micrometer Screw,	100.

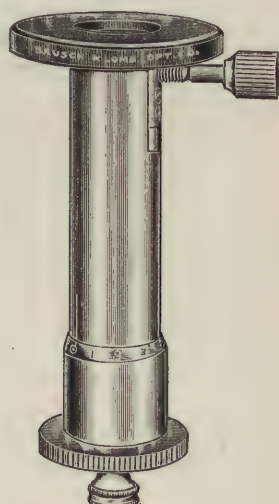
- 2130. Small Laboratory Microtome**, with clamp, as shown on page 41 (without case), with knife of best hand-forged steel, 12 cm. cutting edge of blade, in plush-lined case **\$20 00**

- 2132. Lever Feed**, for Small Laboratory Microtome, in place of regular feed, extra **13 50**

This feed is similar in construction to the Lever Feed arrangement, described under Large Laboratory Microtomes, except that the graduated disc is necessarily smaller to correspond with the smaller stirrup of the Small Laboratory Microtome. The reduced size of the disc makes it necessary to reduce the number of notches on the margin to 100, each of which has a value of 5 micra., which is the minimum motion of the feed.



No. 2134. SIMPLE MICROTOME



No. 2136. HAND MICROTOME

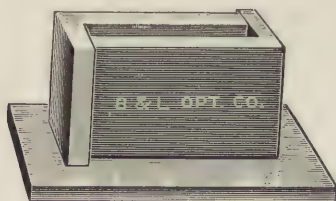
CHAS. LENTZ & SONS

2134. Simple Microtome, with clamp to attach to table **\$12 00**

The frame of this microtome is of a single casting, which forms the cutting plate and support for the object holder. Two polished glass plates are attached to the upper surface of the frame and form the guide for the knife. The object clamp has vertical and a limited lateral adjustment, by means of the post attaching the jaws to the slide piece. The feed is by accurate micrometer screw, of 0.5 millimeter pitch, the head being graduated into 100 parts, permitting reading to 0.005 mm. The object carrier has vertical movement of 18 mm. by means of the micrometer screw. This microtome is a very useful one for botanical and histological work, cutting frozen sections, etc.

2136. Hand Microtome **6 00**

Designed by Prof. E. S. Bastin, and in use in the laboratory of the Philadelphia College of Pharmacy. This microtome is intended for sectioning vegetable tissues, and will be found especially useful in Botanical and Pharmaceutical laboratories.



2138. Paraffine Imbedding Box, of type metal, each of two pieces, with metal plate.

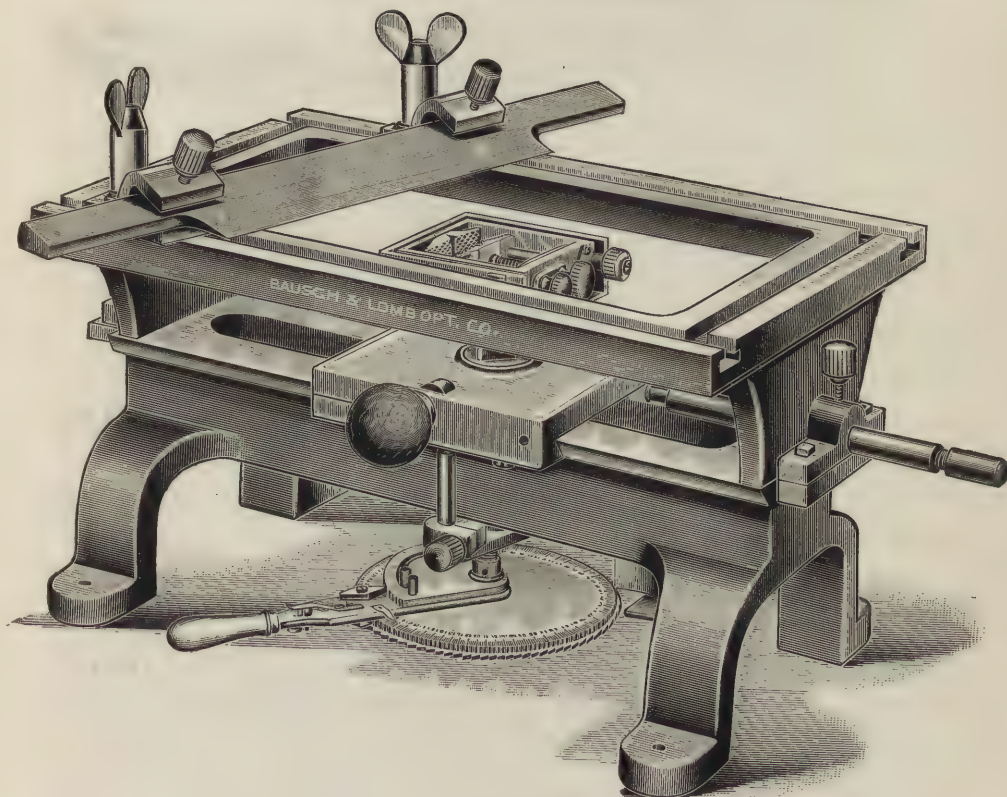
Height	10	20	30 mm.
Price, each	\$0.45	.45	.45

2140. Fibre Blocks, to fit clamp of microtome for attachment of embedded objects, per dozen **\$1 00**

PHILADELPHIA

Automatic Precision Microtome

AFTER PROF. CHARLES S. MINOT, HARVARD MEDICAL
SCHOOL, BOSTON, MASS.



No. 2142

Figure one-fourth actual size

This microtome is entirely unique in construction, and its extreme rigidity and convenience for work, together with the fact that on it any kind of material embedded by any process desired can be cut with precision, makes it pre-eminently the laboratory microtome of to-day.

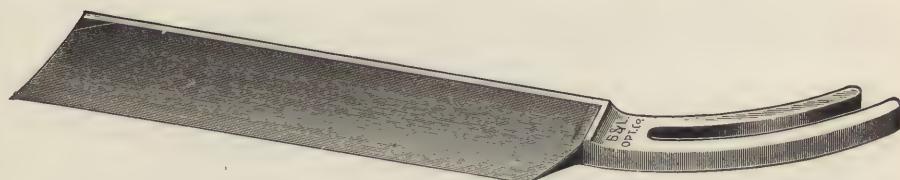
It is especially useful for fine embryological work. In this microtome the knife is rigidly clamped immovably at both ends, and the object-carrier moves towards the knife.

The knife supplied with the microtome is of the finest quality, exactness and perfection of finish. They are made in our own workshops, and we have had to construct special machinery for their manufacture. They are the acme of perfection in microtome knife manufacture.

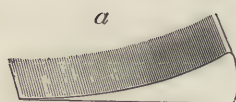
2142. Automatic precision microtome, complete with knife \$85 00

2144. Polished case, with handle and lock, for above, extra 6 00

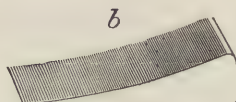
Microtome Knives, etc.



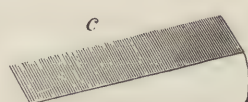
No. 2150



For Celloidin Work



For Paraffin Work



For Frozen Sections

- | | | |
|-------|---|--------|
| 2146. | Section Knife, for mechanical microtome, cutting edge 85 mm.
in case, each | \$3 00 |
| 2148. | Section Knife, for mechanical microtome, cutting edge 100 mm.
in case, each | 8 00 |
| 2150. | Section Knife, for mechanical microtome, cutting edge 150 mm.
in case, each | 10 00 |
| 2152. | Same as No. 2150, but 3 mm. thicker at the back, for cutting
hard substances, each | 10 00 |

These knives are made of the very best of English steel. They are *hand forged*, properly tempered, of the very highest attainable quality, and are best suited for work in microtomy. Each knife is thoroughly tested before it is sent out and we guarantee its perfectness. They are manufactured in our own factory.

Unless otherwise ordered knives are always sent of section *b* which is suited for both paraffin and celloidin work.

Special Microtome Knives of any size and shape made to order.



No. 2156

- | | | |
|-------|---|------|
| 2154. | Section Knife, for simple microtome, ebony handle, cutting
edge 115 mm., in case, each | 3 50 |
| 2156. | Section Knife, cutting edge 140 mm., each | 5 00 |

Price List for Grinding and Honing Microtome Knives

By experienced workmen, and ensuring a wonderfully keen edge.

Cutting edge.	Price.
3½ to 4 inch	\$0 35
4 to 4½ "	40
4½ to 5 "	50
5 to 5½ "	60
5½ to 6 "	70
6 to 6½ "	85
6½ to 7 "	1 00
7 to 8 "	1 25

We have better facilities for **properly** sharpening microtome knives than any other firm in the United States.

Honing only, according to length of cutting edge of knife, 15 to 25 cents.

Hones, Strops, etc.

2158. Hone, Yellow Belgian, very best quality, 234 mm. long, 52 mm. wide, set in wooden block with cover **\$3 00**

2160. Hone, Bluish Green, imported, 260 mm. long and 52 mm. wide, with rubbing stone, both in wooden block with cover . . . **90**

2162. Adjustable Leather Strop, with handle 234 mm. long, 40 mm. wide **1 25**

This strop has two surfaces suitable for microtome knives, and a very strong screw for tightening the leather, thus preventing its giving, and rounding the edge of the knife.

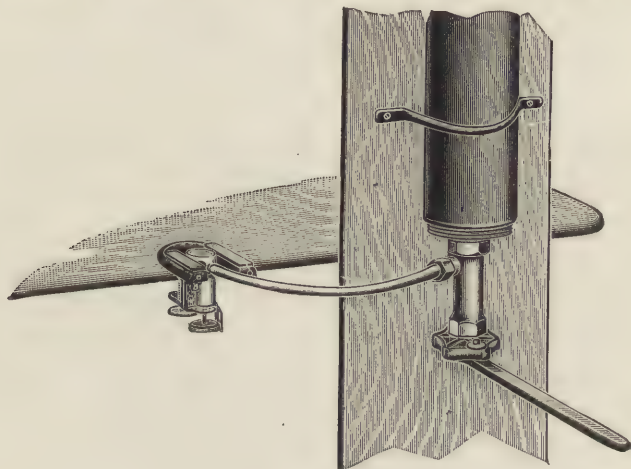
2164. Bow Strop, 324 mm. long, 60 mm. wide **2 00**

2166. Block Strop, solid, fine, each **1 00**

2168. Block Strop, solid, coarse, each **1 00**

CHAS. LENTZ & SONS

Embedding and Freezing Apparatus.

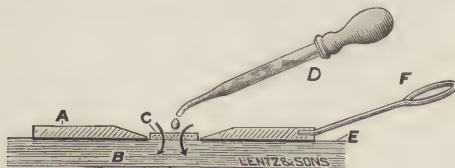


No. 2170. AS APPLIED TO SIMPLE MICROTOME.

Always ready. The most rapid and best freezer made.

2170. Carbonic Acid Freezing Attachment, for the Microtome . . . \$26 00
Refilling Cylinder, with Carbonic Acid 4 75

2172. PROFESSOR RYDER'S EMBEDDING APPARATUS

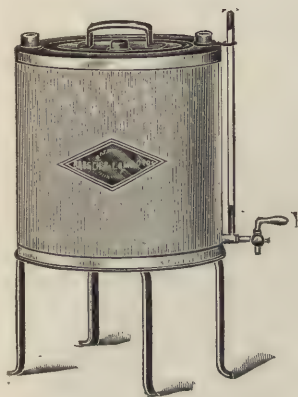


This apparatus was made by us for the late John A. Ryder, of the University of Pennsylvania, and is intended for the embedding and cutting of exceedingly minute objects.

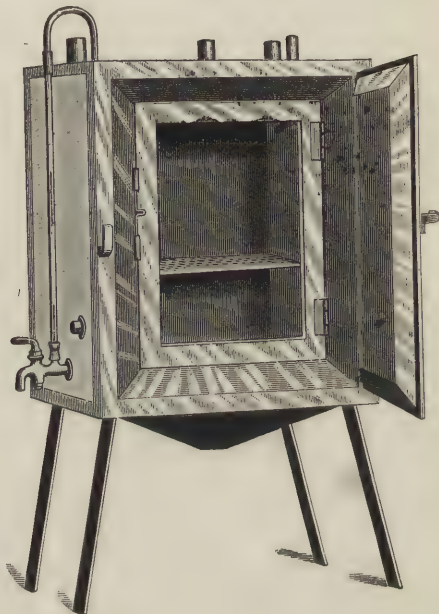
It consists of a metal ring *A*, to which is attached by heated paraffin a sheet of filter-paper *E*, the central circle being left absorbent. The whole is then placed upon a number of sheets of filter-paper. A thin section of elder pith *C*, is then cut and placed on top of this absorbent circle. The minute eggs, etc., having been placed on top of this disc of pith, a few drops of water are let fall from a pipette *D*. The filter-paper *B* thus absorbs all the water in the direction of the arrows and the small objects are thus entrapped and held fast in the meshes of pith. The disc is then removed with a pair of fine forceps, embedded in paraffin on its edge and sections cut with a sledge microtome. By this method Dr. Ryder has stained and obtained several sections of such small objects as *Paramoecium aurelia* also *Halteria* (the latter are about the size of a white blood corpuscle). See "American Naturalist," February 7, 1895. Each, 50 cents.

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Bacteriological Incubators



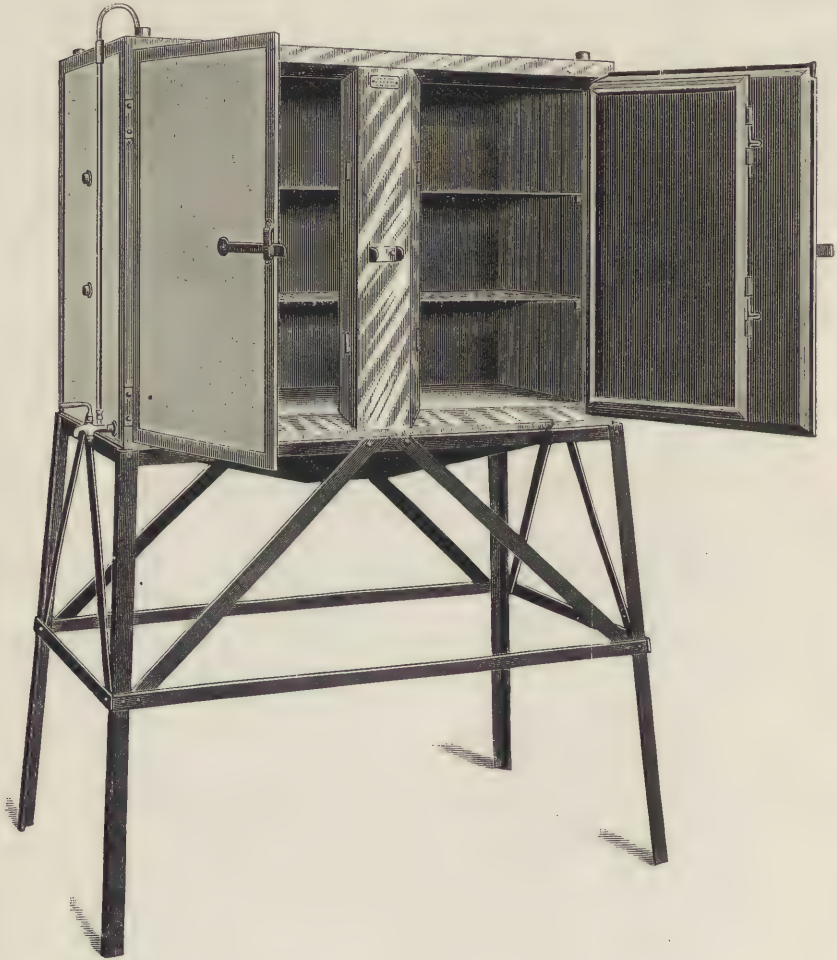
No. 2174



These incubators are **thoroughly well made**, and are **properly tested** and **retested** both during manufacture and just before shipment. The workmanship is of the finest, and they are far superior in every respect to the best of foreign manufacture in their appearance, durability, **exact** fitting of parts to prevent evaporation of culture media, scientific construction to prevent radiation and convection of heat, in economy of gas, and in their convenience and adaptation to the needs of the bacteriologist. In the manufacture the **double copper walls** of the water space are **first perfectly fitted and tested** and afterwards the outer wall and covering are fitted so that there can be no possible leakage from the water chamber. The bottoms of the incubators are so constructed that there is no dripping from condensation of the vapor given off by the burner. A **metal** tube traverses the wall of incubator, communicating between the gas regulator and bunsen burner, **to prevent danger of fire**. These incubators being of domestic manufacture, any part broken or deranged by accident can be immediately repaired. The stout copper walls of water space are thoroughly bound and firmly braced to prevent bulging from the enormous weight of the contained water. The water space is surrounded by an air space, which is enclosed by a metal wall covered with another heavy wall of non-conducting waterproof material, having a very neat appearance, and which will not crack in use. Most the larger incubators are supported by a strong angle iron frame well braced, bringing them to a **level convenient for manipulation** and examination of contents. Where specially indicated, the burner is completely enclosed by a sheet-iron casing to protect the flame of the burner from currents of air or sudden gusts. Where the burner is thus enclosed, a small door is placed in front, with window for observation or adjustment of the flame.

CHAS. LENTZ & SONS

The inner glass door in the larger incubators is of bevelled plate. The outer doors are **prismatic**, and are properly and accurately fitted and mitred, with felt buffers to ensure **perfect fit** and close contact. This is of the utmost importance, especially in the large incubators for tuberculin or diphtheria antitoxin manufacture. There is no sliding cover to the outer door, as this increases the cost, and has not a single advantage to the **practical** bacteriologist. A ventilator is supplied at top of incubator to allow of the escape of burned air and gas. In



incubators where this is omitted there is danger of explosion, and there is much fluctuation of temperature. The large tubulatures provide plenty of room for large gas regulators, such as the Dunham, etc. They are all provided with water level and stopcock and movable shelves.

The visible copper walls are highly polished, also the copper edges and framework, which are also lacquered. These incubators are now in use in many of the largest and best-equipped laboratories in the United States, and have **invariably**

PHILADELPHIA

given perfect satisfaction. In many cases we have replaced apparatus of European manufacture, and wherever in use they are considered superior.

Prices as listed below are for **incubators only**. Gas regulator, thermometers, Koch safety burner and tubing extra. Sizes in every case are **inside** measure.

All incubators except No. 2176 have bevelled plate glass inner doors.

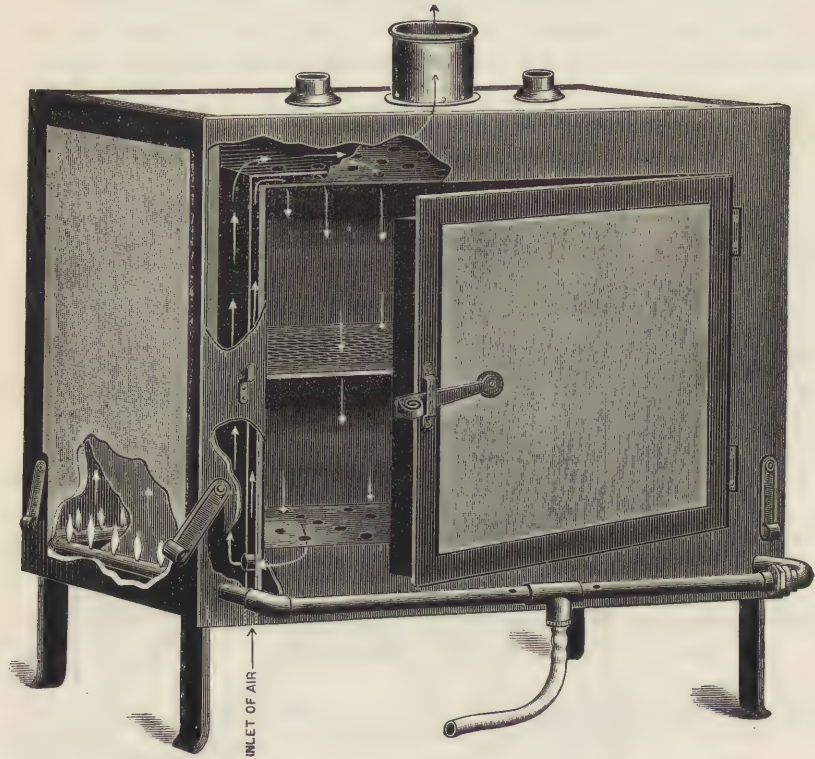
- 2174. Physician's Incubator**—Cylindrical. Double wall, without air space, 8 x 9 inches inside. Excellent for a rapid diagnosis for diphtheria, etc. **\$12 00**
- 2176. Physician's Incubator**—Square form. Triple wall, with air space around water. Excellent for general bacteriological work on a small scale, 9½ x 6½ x 6½ inches inside **25 00**
- 2178. Hospital Incubator**—Suitable for the clinical laboratory of a small hospital. Triple wall, etc., 12 x 9 x 9 inches **40 00**
- 2180. Laboratory Incubator**—19 x 12 x 9½ inches. For general bacteriological work and for college use. **60 00**
- 2182. Laboratory Incubator**—19 x 18 x 9½ inches. For general bacteriological work and for college use **80 00**
- 2184. Laboratory Incubator**—19 x 18 x 14 inches. For general bacteriological work and for college use **100 00**
- 2186. Laboratory Incubator**—28 x 18 x 14 inches. For Board of Health use, etc. **125 00**
- All of the above except No. 2176 have **covered-in base** to protect flame.
- 2188. Laboratory Incubator**—18 x 18 x 12 inches. For general bacteriological work **80 00**
- 2190. Laboratory Incubator**—30 x 18 x 14 inches. Two outer doors. For general bacteriological work, tuberculin manufacture, etc. **118 00**
- 2192. Laboratory Incubator**—30 x 25 x 18 inches. For general bacteriological and Board of Health work **170 00**
- 2194. Laboratory Incubator**—84 x 20 x 15 inches. Four outer doors **300 00**

Nos. 2188 to 2194 will be supplied with covered-in base, if desired, at extra cost.

- 2178A.** No. 2178 without covered-in base **35 00**

CHAS. LENTZ & SONS

Hot Air Sterilizers



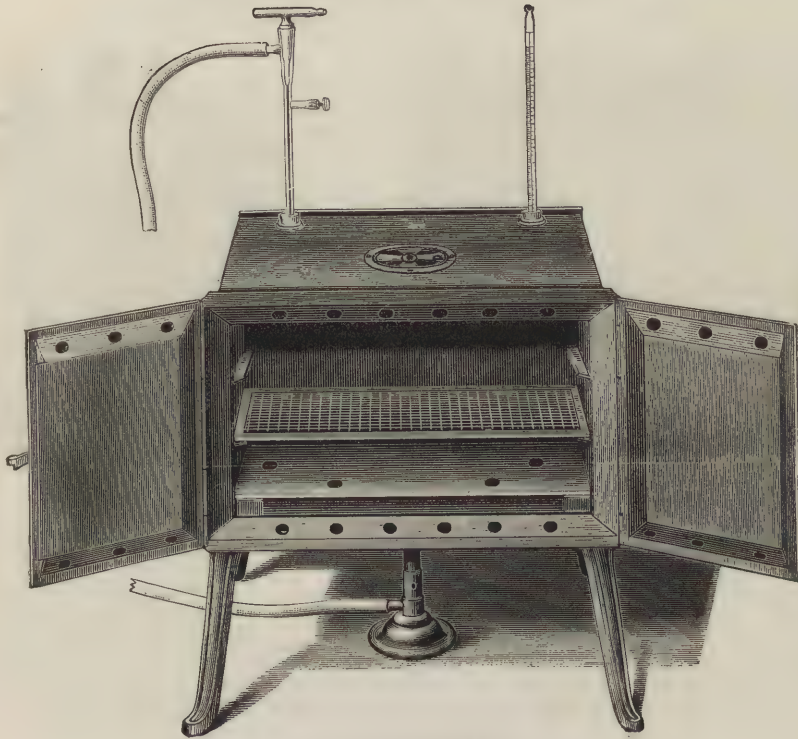
Nos. 2196-8

Hot Air Sterilizer, Lautenschlaeger Pattern.—These ovens are thoroughly well made and strongly constructed. They are made of the best Russia iron, covered with enamelled asbestos. They are intended for laboratory work, where economy of gas and time is a *sine qua non*. They will heat apparatus placed inside much more rapidly than any other sterilizer made, on account of the rapid reverberation and circulation of heated air in all parts of the interior of oven. The walls do not get so hot as the ordinary oven. There is, therefore, less danger of burning cotton. (The circulation of heated air inside the double wall does not communicate with the directly heated air from the row of small bunsen burners which surround the oven.) These ovens can be heated to 150° C. in fifteen minutes.

2196.	Size, 12 x 18 x 9 inches deep	Price, net . . .	\$35 00
2198.	" 18 x 24 x 14 " "	" " . . .	45 00
	Special gas regulator	Extra . . .	3 50
	Thermometer '200° C.	" . . .	1 50

PHILADELPHIA

Hot Air Sterilizers

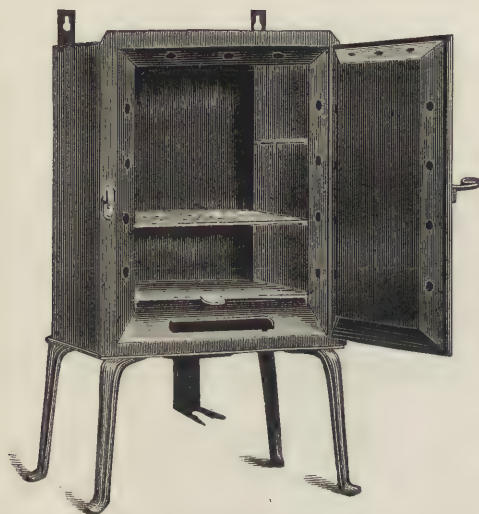


Nos. 2200-2206

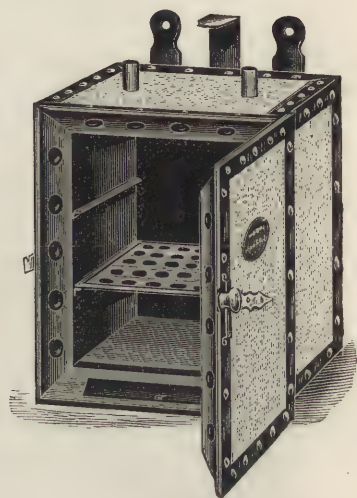
Hot Air Sterilizers.—For sterilizing glassware, instruments, etc., by dry heat. By the system of hollow perforated doors a uniform degree of heat is rapidly obtained in all parts of the oven. They are made of the best Russia iron, with double walls. The heat is furnished by a powerful bunsen burner placed below the funnel-shaped opening at bottom of oven, where a removable sheet of copper is placed to prevent burning out. The air circulates between the double walls and escapes through the register in the centre of the top. The directly heated air and products of combustion do not communicate with the interior of the oven.

2200.	9 inches high by 12 inches wide by 9 inches deep, without gas regulator, thermometer or Bunsen burner	\$12 50
2202.	9 inches high by 15 inches wide by 9 inches deep, without gas regulator, thermometer or Bunsen burner	13 50
2204.	9 inches high by 18 inches wide by 9 inches deep, without gas regulator, thermometer or Bunsen burner	15 00
2206.	12 inches high by 24 inches wide by 12 inches deep, without gas regulator, thermometer or Bunsen burner	22 50
	Improved gas regulator, extra	2 50
	Thermometer, 400° F. or 200° C., extra	1 50

Hot Air Sterilizers



No. 2208



No. 2212

Hot Air Sterilizer.—Upright pattern, with ears to hang and fork support for burner. Construction same as Nos. 2200-6.

Same as supplied by us to the Philadelphia Board of Health and other bacteriological laboratories for sterilizing test tubes, flasks, etc.

Regulator on top to govern air current.

2208.	Inside measurement, 12 x 9 x 9 inches	Price . .	\$14 00
2210.	“ “ “ 6 x 6 x 6 “	“ . .	10 00

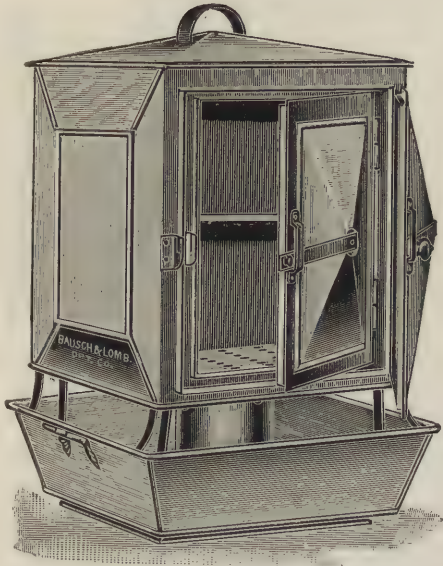
Hot Air Sterilizer.—Upright pattern, with ears for hanging and fork support for burner. **Asbestos-covered** to retard radiation of heat.

2212.	Inside measurement, 12 x 9 x 9	\$20 00
	Improved gas regulator, extra	2 50
	Thermometer, 400° F. or 200° C., extra	1 50

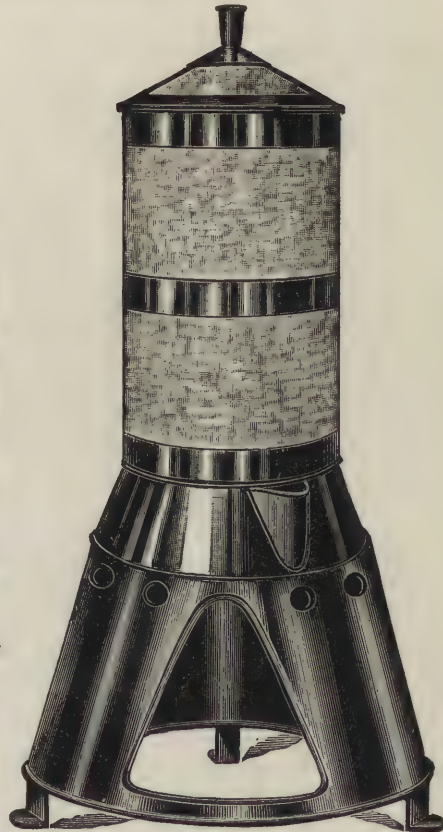
Tubulations are provided in all sterilizing ovens for insertion of gas regulator and thermometer. We recommend the purchase of either the large “locomotive” burner or the triple Bunsen burner, for heating these sterilizers. The special hand wrapped rubber tubing, listed, is the best for connections, as it will neither split nor become hard in use.

PHILADELPHIA

Steam Sterilizers



Nos. 2214-16



No. 2218

Steam Sterilizer.—Boston Board of Health form. Of copper throughout with double door, and is constructed on the same principles as the Arnold sterilizers. The large size, square form, and doors opening conveniently, make this sterilizer more desirable for laboratory purposes than the round or oval shapes.

- 2214.** Dimensions, 14 inches high, 8 inches wide, 8 inches deep \$24 00
2216. " 16 inches high by 11 inches wide by 12 inches deep 26 00

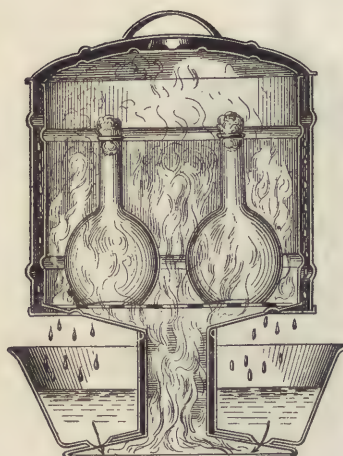
Steam Sterilizer for Bacteriological Work.—Made of cold rolled copper, lined with asbestos. Base or stand made of planished Russia iron. Body, height 17 inches ; diameter, 9½ inches ; water pan, 4½ inches ; diameter, 13½ inches.

- 2218.** Base, 11 inches, diameter 17 inches, tapering to 14 inches at top, Price . \$22 50
 With automatic cut-off to prevent burning out of copper, extra 5 00

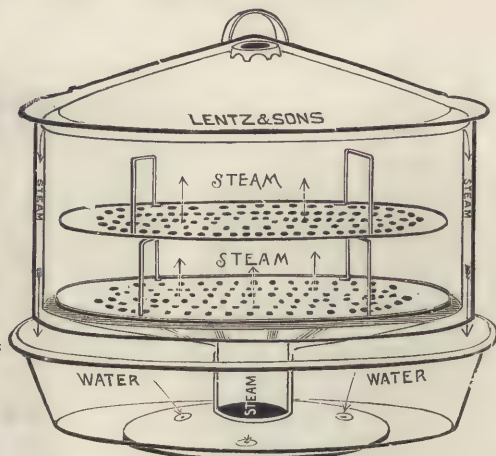
Same as supplied to Philadelphia Board of Health, etc. An extra body can be fitted, making it twice the height if desired. This can be made to order any size or shape desired.

CHAS. LENTZ & SONS

Steam Sterilizers



Nos. 2220-2226
SECTIONAL VIEW



Nos. 2228-2232
SECTIONAL VIEW



No. 2234

Arnold Steam Sterilizers used in nearly every Bacteriological Laboratory.

—A very inexpensive, economical and efficient apparatus for sterilizing tubes and flasks of culture media by the fractional method. Steam is generated as soon as the burners are lighted, and will continue being generated even while cold water is constantly flowing into the tank to replace loss by evaporation.

CYLINDRICAL FORM.

	Height.	Width.	Heavy tin, copper bottom.	All copper.
2220.	7½ inches.	8½ inches.	\$2 50	\$7 00
2222.	10½ inches.	9¾ inches.	3 00	8 00
2224.	11½ inches.	10½ inches.	3 50	9 00
2226.	12½ inches.	11¼ inches.	4 00	10 00

OVAL FORM.

	Height	Width.	Length.	Tin, copper bottom.	All copper.
2228.	6 inches.	9¼ inches.	14 inches.	\$5 00	\$12 50
2230.	7 inches.	10½ inches.	16 inches.	6 00	15 00
2232.	8 inches.	12 inches.	18 inches.	7 00	17 50

Special sizes made to order.

Automatic Water Level.—By inserting a cork with glass tube into lower end of the vertical metal tube and connecting by rubber tubing to the sink, the water in sterilizer can be automatically kept at any height desired. When this arrangement is applied there is no danger of burning out the copper bottom of sterilizers, water-bath, etc.

2234. Including fitting to sterilizer \$1 00

PHILADELPHIA

Autoclavs, or Pressure Sterilizers



No. 2236



No. 2238

2236. Autoclav.—Boilers of best quality seamless wrought copper tested and warranted to 50 pounds to the square inch pressure. Adjustable safety valve, pressure gauge, steam cock and thermometer. The whole apparatus on iron base.

Size of boiler, 9 inches deep by 8 inches diameter	\$54 00
12 inches deep by 8 inches diameter	65 00
17 inches deep by 10 inches diameter	85 00
Burner extra	2 00

2238. Autoclav (Pressure sterilizer).—Boiler of heavy copper, top of solid cast brass (tinned inside). Thoroughly tested. With six clamps. The lid is **perfectly and accurately ground** V shape to fit the boiler, which is a great improvement over lead or rubber packing, and adds considerably to the cost of manufacture. Fitted with pet valve for air outlet, adjustable safety valve, thermometer with metal guard, pressure gauge, water outlet cock, etc. The whole standing firmly on a heavy sheet iron base. Used at Philadelphia Board of Health, etc.

A very neat, strong and compact apparatus with no unnecessary weight. Dimensions 11¼ inches diameter, 23½ inches deep inside. Actual available space above tray 11 x 22 inches. A perforated tray is supplied which separates water space from contents of sterilizer.

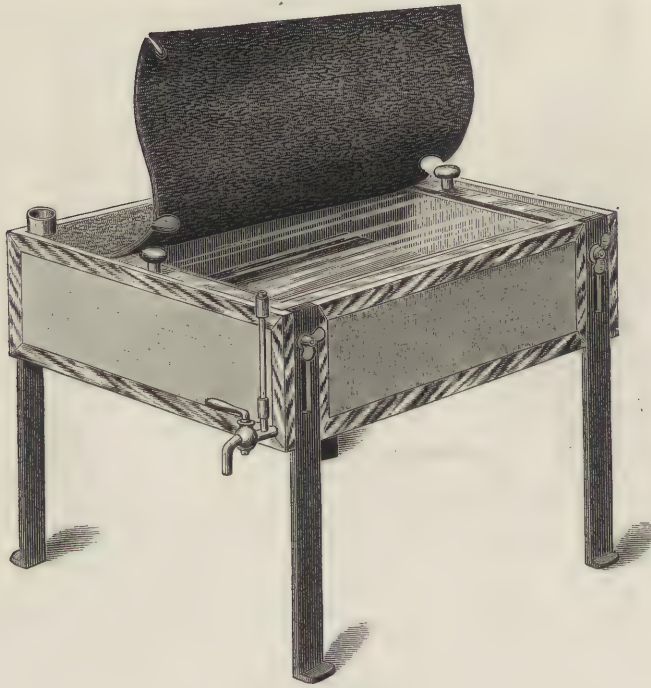
Price, complete, with double tube burner **60 00**

This is an exceptionally neat and compact autoclav, and is thoroughly efficient and safe for all bacteriological purposes such as sterilization of agar-agar, etc.

One heating only required.

CHAS. LENTZ & SONS

Blood Serum Ovens



No. 2240

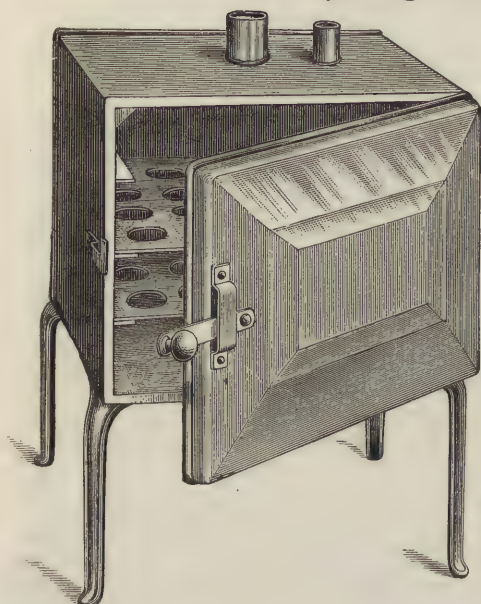
2240. Apparatus for coagulating blood serum, after Koch.

These ovens are made of solid copper, double-walled, tinned on the inside and covered with asbestos. The glass top is covered with felt. It has openings for thermometer and gas regulator; water level and drip cock. The two front legs move in grooves, so that the tilt can be adjusted according to the amount of media used. Same as used by Board of Health, Philadelphia, etc.

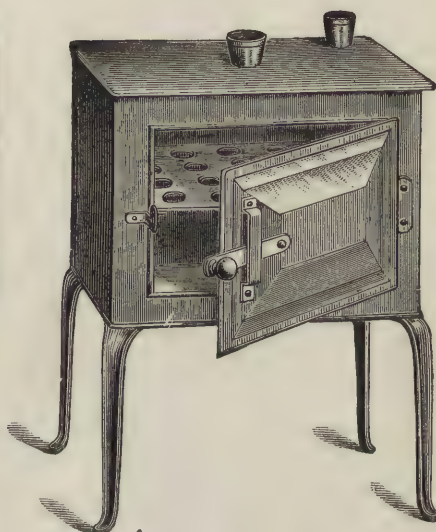
Size, 16 x 14 x 2½ inches deep, inside, price	\$30 00
“ 12 x 10 x 2½ “ “ “ “	18 00
Thermometer, 150° C., extra	1 25
Gas regulator, special, for water chamber, extra	2 50
Triple bunsen burner or ring burner, extra	1 50

PHILADELPHIA

Drying Ovens, etc.



No. 2242



No. 2244

2242. Drying Oven (single wall), made of polished copper, with tubulations for thermometer and gas regulator, movable shelf, extra sheet iron bottom and four detachable iron legs.

6 x 8 inches outside.

\$5.00

8 x 10 inches.

\$7.00

10 x 12 inches.

\$9.00

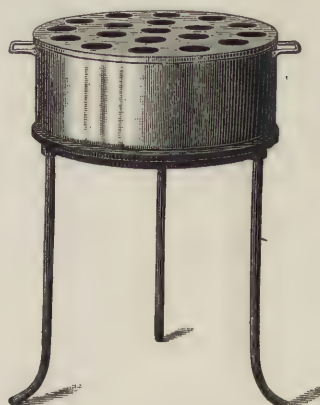
2244. Drying Oven (double wall), made of polished copper, with opening for thermometer and gas regulator, movable shelf, extra sheet iron bottom and four detachable iron legs.

10 x 12 inches **\$10 00**

10 x 12 inches, with water bath tops and rings for dishes **12 00**



No. 2246



No. 2248

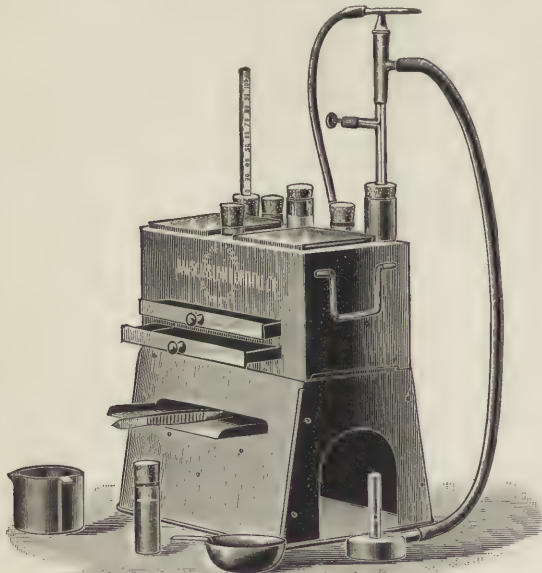
Paraffine and Water Baths

2246. Water Bath.—Polished copper, tin-lined, concentric copper rings.

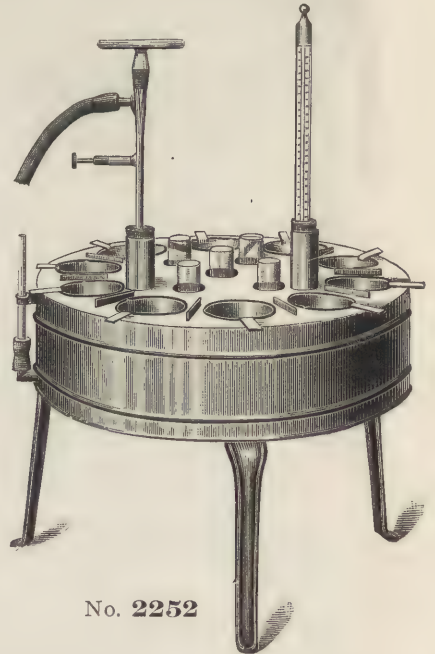
Diameter, inches	4	5½	8	10
Rings	3	6	6	7
Price	\$0.85	\$1.50	\$2.25	\$5.00
With constant water level, price, extra	50			

2248. Water Bath for Inoculating Gelatin Tubes, etc.; polished copper, tin-lined.

7¼ inches diameter and 3 inches deep; height of tripod, 9 inches . \$2 50



No. 2250



No. 2252

2250. Improved Paraffine Bath.—Polished copper, 8 inches long by 4 inches wide by 4 inches deep, provided with extra sheet-iron bottom to prevent burning out. Sheet-iron base is 5 inches high. The bath has two nickel-plated cups, one shallow and hemispherical and one deep. With two drawers for slides. Exclusive of thermometer, thermostat and bunsen burner, price \$10 00

2252. Large Paraffine Bath for College Use.—Polished copper, 12½ inches in diameter, 3½ inches deep. Height, 11 inches.

There are seven deep cups, 2½ inches diameter and 1½ inches deep, and three shallow hemispherical, 2½ inches diameter and ¾ inch deep.

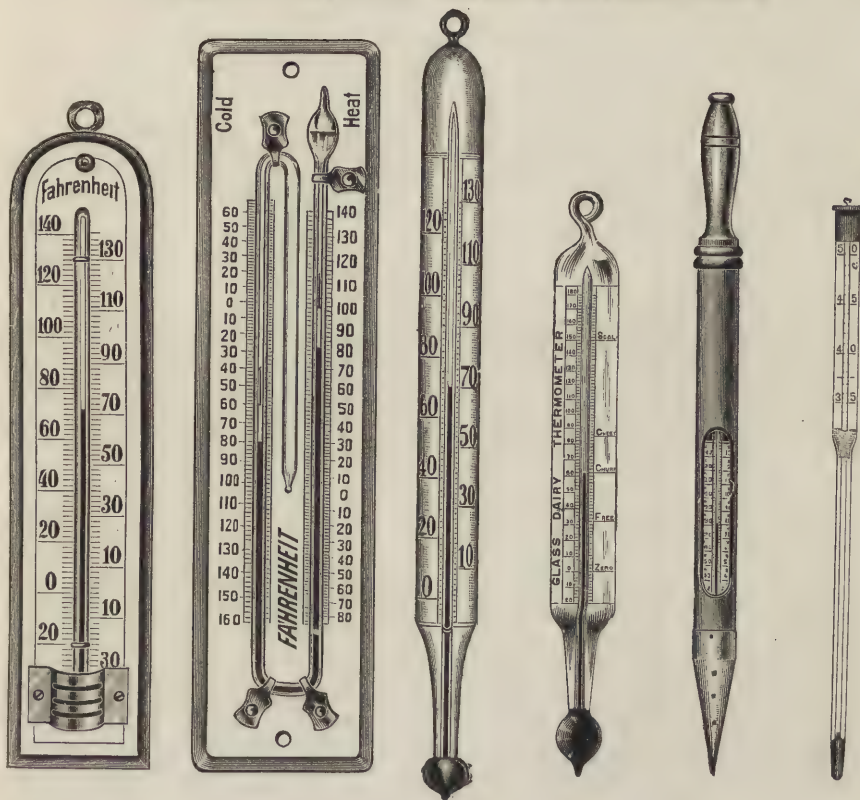
Exclusive of thermometer, gas regulator, or burner, price \$14 00

2254. Paraffine Oven, after Dr. Frank R. Lillie, University of Michigan.

With 8 drawers	\$60 00
With 16 drawers	75 00
With 24 drawers	90 00

PHILADELPHIA

Laboratory Thermometers



No. 2256 No. 2258 No. 2260 No. 2262 No. 2266 No. 2268

2256. Laboratory Wall Thermometer, oak back, porcelain scale, magnifying tubes.

12-inch, each \$2 00
8- " " 1 25

2258. Six's Registering Thermometer, maximum and minimum, heavy plate glass, with arms for attaching.

Each \$3 50

2260. Self-Registering Maximum Thermometer, for incubators, 6 inches long, graduated extremely accurately in one-tenths, 20° to 50° C.

Each \$4 00

2262. Floating "Dairy" Thermometer, common grade, paper scale.

Small, each \$0 35
Large, " 75

2164. Thermometer, with long contracted stem for taking temperatures of milk, etc., in bottles or open vessels.

Each \$1 00

2266. Earth Thermometers, for "Nitragin" and other experiments with bacteria in the soil.

Standard grade 10-inch metal scale thermometers, mounted on turned wood frame, with brass pointed bottom, each \$2 50

Incubator and Chemical Thermometers

2268. Incubator Thermometers, special, extra quality and very accurate, wide porcelain scale, with very distinct index to facilitate reading at a distance. The degrees on scale are well separated; 25° to 50° C.; red line at $37\frac{1}{2}^{\circ}$. The stem is contracted below scale so that it can be inserted deeply through a cork in tubulature of incubator with all graduations visible—used in all Philadelphia laboratories and numbers of laboratories throughout the United States.

Short stem, extreme length, 11-inch, each	\$2 00
Long " " " 17- " "	2 25
Special sizes made to order, each	2 50

2270. Chemical Thermometers, scale etched on stem, extra grade. These thermometers are carefully and accurately graduated and tested at extreme and intermediate temperatures. They are made from well seasoned tubes and have lens front, magnifying the column of mercury, to facilitate accurate reading at some distance. They are furnished in stiff pasteboard case.

12-inch thermometer, 220° F. or 100° C., each	\$1 00
12- " " 300° F. or 150° C., "	1 25
14- " " 400° F. or 200° C., "	1 50

2272. Chemical Thermometers, porcelain scale, same quality as above, but not lens front.

8-inch thermometer, 50° C., each	\$1 00
12- " " 212° F. or 100° C., each	1 00
14- " " 400° F. or 200° C., "	1 50

2274. Chemical Thermometers, hand-written, paper scale, small diameter, extra quality, but not lens front.

8-inch thermometer, 32° F. to 212° F. or 0° to 100° C., each	\$0 60
14- " " 32° F. to 400° F. or 0° to 200° C., "	75

NOTE.—Chemical thermometers for students' use can be supplied, with special metal sheaths with bulb and graduations visible, at extra cost.

2276. Veterinary Thermometer, encased in a strong, nickel-plated sheath, with bulb and scale exposed and may be used without being removed, useful in anti-toxin and tuberculin work.

Each	\$2 00
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Clinical Thermometers (see surgical instrument catalogue).

No. 2270

To convert Fahrenheit degrees into those of Centigrade—subtract 32, divide by 9 and multiply by 5.

To convert Centigrade degrees into those of Fahrenheit—divide by 5, multiply by 9 and add 32.

PHILADELPHIA

Gas Regulators

(THERMOSTATS)

2278. Lentz's Latest Gas Regulator.—This regulator is original with us, and is considered the most practical inexpensive regulator made.

The bulb containing mercury is placed through tubulature in the air or water space of incubator. The inlet tube A is connected by means of rubber tubing to the gas supply. The outlet tube E is connected in the same manner with the burner under incubator. The gas enters at A, passes through the large aperture B, then down through the hollow T-shaped stopcock and over the surface of the mercury at F, and thence to the burner through the outlet tube E. When the temperature in the incubator tends to rise higher than that at which the bacteriologist has adjusted the regulator, the mercury in bulb expands till it closes the opening at F. The only course then left is through the small aperture in the side of stopcock C and downward through a narrow groove D in the interior of collar or bushing of stopcock immediately adjacent to this small aperture, and thence to the burner.

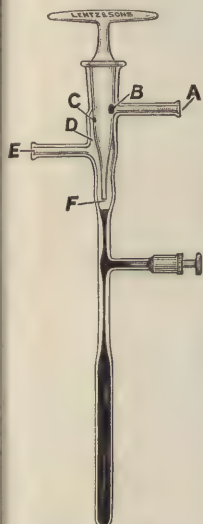
The aperture available for the gas to pass can be reduced to any size desired by slightly turning the stopcock to the right or left of the median line. With a minim or small Koch bunsen burner the size of the reserve flame (which is to prevent the flame going out entirely) can be reduced automatically to $\frac{1}{8}$ -inch in height, or the stopcock can be adjusted for the reserve flame of a larger burner just sufficiently to prevent it striking back and igniting at the air inlet. A most important feature of this regulator is that the tubes A and E are rigid and immovable, so that there is no danger of their shifting from the weight of attached rubber tubing. The incubator is kept stationary at any desired thermal point by adjusting the plunger at side.

The screw of the old Reichert regulator has been discarded and in its place there is a glass rod plunger (with knob at end for convenience in manipulating). This plunger works in a stuffing box, which is securely packed and is adjustable, so that there can be absolutely no leakage of mercury.

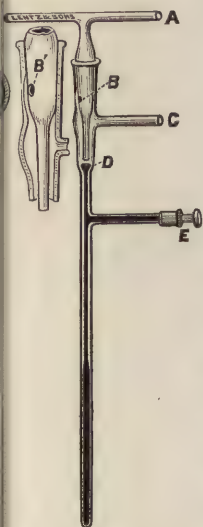
By slowly pushing in the rod with a slightly rotary motion the mercury is displaced, and rising, closes the aperture at bottom of T stopcock sooner and lowers the thermal point. The thermal point is raised when desired by pulling out the plunger slightly. Made in two sizes, small, for water baths, etc.; large, for incubators and sterilizers, each

\$3 50

This regulator is very sensitive, and will regulate the temperature of an incubator automatically to less than $\frac{1}{2}^{\circ}$ C. There is about eight times the quantity of mercury in bulb that is usually employed.



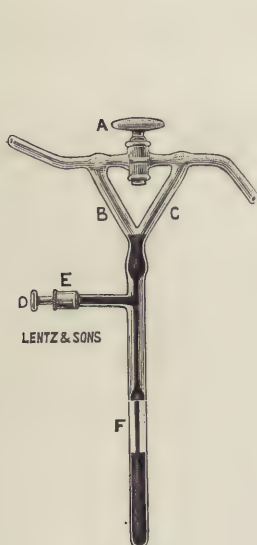
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No. 2280

CHAS. LENTZ & SONS

Gas Regulators



No. 2282



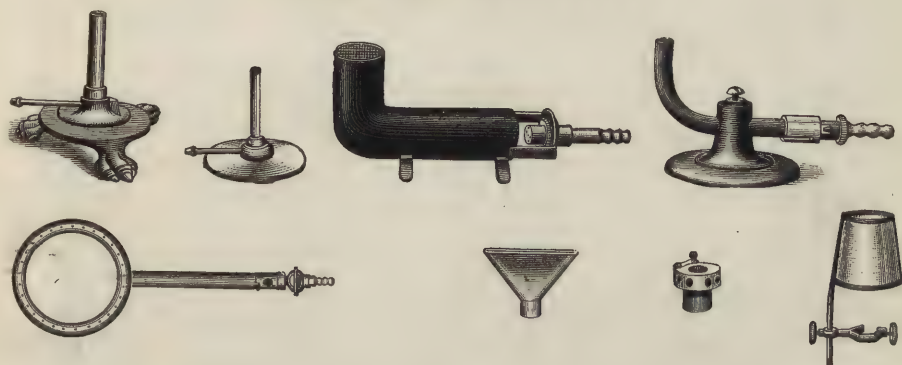
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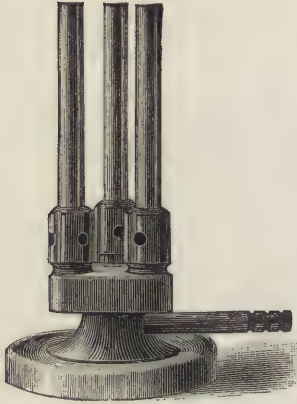
- 2280. The Gassner Reichert Gas Regulator Modified by Comer and Lentz.**—In this regulator the gas enters at A, passes down through the ground in T piece and out to the burner at C. When the mercury rises and closes opening D, the reserve flame is fed through the small adjustable opening and groove B (shown enlarged at B' and in cross-section at B''). This is an excellent regulator, but the T piece is liable to be misplaced by the weight or movement of attached rubber tubing and is easily deranged by students, each \$2 25
- 2282. Munckes Gas Regulator Modified by Lentz.**—For low pressure only. The expanding air or ether vapor in bulb drives up the mercury in central tube and prevents the gas passing in tubes B and C. The reserve flame is then fed through the adjustable stopcock A. Very sensitive. Inlet and outlet tubes rigid, each 5 50
- 2284. Dunham's Gas Regulator.**—Very sensitive. Operated by the expansion of alcohol in bulb acting upon a mercury column. Reserve flame not adjustable. Filled complete 3 50
- When shipped out of the city the regulator must be filled by consignee.
- 2286. Lotha Mayer Gas Regulator for Sterilizing, etc.**—Bulb contains air which pushes up the mercury column on expanding. Thermal point regulated as in the Dunham regulator, by raising or lowering inflow tube in the rubber or cork stopper, each 2 00
- Lautenschlaeger's Gas Regulator. Imported to order only.
- Scheibler's Electrical Regulator. Imported to order only.

Bunsen Burners

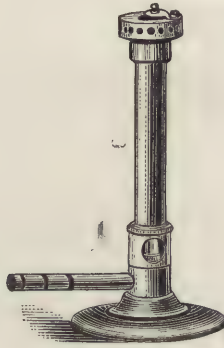


- 2288. Bunsen Burner.**—Small, with bronze base; height, 3 inches; diameter of tube, $\frac{3}{8}$ inch; length of horizontal tube, $1\frac{1}{2}$ inches **\$0 30**
- 2290. Bunsen Burner.**—Small, with bronze base; height, $4\frac{3}{4}$ inches; diameter of tube, $\frac{3}{8}$ inch; length of horizontal tube, 5 inches. Our own design **40**
- 2292. Bunsen Burner.**—Small; brass, nickel-plated; height, 2 inches; diameter of tube, $\frac{1}{4}$ inch **50**
- 2294. Bunsen Burner.**—Small; brass, nickel-plated; height, 4 inches; diameter of tube, $\frac{1}{4}$ inch, and with extra long horizontal tube to prevent danger of burning rubber connection. Our own design **60**
- 2296. Bunsen Burner.**—Low shape; cast iron; extra large; gauze top, $2\frac{1}{4}$ inches diameter, 5 inches high; extreme length, 14 inches **3 50**
- 2298. Bunsen Burner.**—Low shape; $\frac{7}{16}$ -inch diameter of tube; 3 inches high **50**
- 2300. Ring Bunsen Burner.**—Without stopcock.
 Inches diameter 3 4 5 6
 Price | **\$1.10 \$1.30 \$1.50 \$2.00**
- 2302. Ring Bunsen Burner.**—With stopcock.
 Inches diameter 3 4 5 6
 Price **\$1.65 \$1.80 \$2.00 \$2.70**
- 2304. Wing Top.**—For burner for bending glass tubing **25**
- 2306. Crown Top.**—Will burn at sides or on top **50**

Bunsen & Koch Safety Burners



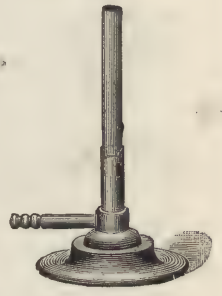
No. 2310



No. 2314



No. 2316



No. 2318

- | | |
|--|---------------|
| 2308. Bunsen Burner. —Brass, with two tubes and air regulators . | \$1 00 |
| 2310. Bunsen Burner. —Brass, with three tubes and air regulators . | 1 50 |
| 2312. Bunsen Burner. —Brass, with four tubes and air regulators . | 2 00 |
| 2314. Bunsen Burner. —With regulator and removable crown, $1\frac{1}{2}$ inches diameter; tube, $\frac{3}{4}$ -inch diameter, 7 inches high; very powerful; so-called locomotive burner | 3 00 |
| 2316. Bunsen Burner. —With stopcock and pilot light; height, 6 inches; diameter of tube, $\frac{1}{2}$ inch | 1 80 |
| 2318. Bunsen Burner. —With flame check; height, 6 inches; diameter of tube, $\frac{7}{16}$ inch | 35 |
| 2320. Bunsen Burner. —With flame check; height, 6 inches; diameter of tube, $\frac{1}{2}$ inch | 40 |

Koch Safety Burners.—Should always be used with incubators.

The lever on stopcock is raised and allowed to rest on the pin, as shown on cut, then the burner is ignited.

After a few minutes the springs will expand so that the lever will slip off the pin and rest on the disc. Should the gas be accidentally blown out, the springs will contract and turn the disc and allow the lever to drop, thus closing off the flow of gas, preventing an explosion.



No. 2324

- | | |
|---|---------------|
| 2322. Koch Bunsen Burner. —Non-adjustable, 5 inches high, $\frac{5}{16}$ burner, | \$4 50 |
| 2324. Koch Bunsen Burner. —Adjustable stand, 9 to 14 inches high . | 5 50 |
| 2326. Mica Chimney. —With clamp to attach to Koch burner | 75 |



No. 2322

PHILADELPHIA

Tripods, etc.



No. 2330



No. 2334



No. 2338

2328. Tripod.—Heavy; diameter, $4\frac{5}{8}$ inches; height, $7\frac{3}{8}$ inches; galvanized iron **\$0 45**

2330. Tripod.—Heavy; diameter, 6 inches; height, 9 inches; galvanized iron **60**

2332. Tripod.—Light; diameter, $3\frac{1}{2}$ inches; height, 5 inches; japanned iron **25**

2334. Tripod.—Heavy, with plate and removable feet, 11 inches diameter, $7\frac{1}{2}$ inches high **1 00**

2336. Tripod.—Heavy, with six concentric rings, from $1\frac{1}{4}$ to $8\frac{1}{4}$ inches diameter, with feet 12 inches long **1 25**

2338. Tripod.—Bunsen's, wrought iron, with sheet iron cylinder to protect flame from draughts of air, $8\frac{1}{2}$ inches high **50**

Tripods for sterilizers, etc., wrought iron. Special sizes made to order.

2240. Wire Funnels of heavy wire, heavily tinned. The twists in the wire on the sides keep the filter paper away from the glass funnel in which it is placed, the air therefore easily escapes and rapid filtration is attained without the necessity of creasing the filter paper. This is the most rapid method of filtering agar, etc., requires no hot water funnel. Used at Philadelphia Board of Health, Johns Hopkins University, Pepper Laboratory, University of Pennsylvania, etc. Price, each **60**

Brass, nickel-plated, each **1 00**

Alcohol Lamps



No. 2342

No. 2344

No. 2346

No. 2348

Alcohol Lamp-Glass.—With ground cap and brass wick-holder complete.

2342.	Capacity 1½ ounces			\$0 20
	" 3 "			30
2344.	" 3 "	globe shape		40
	" 6 "	" "		50

2346. Alcohol Lamp.—With cap, wick regulated with a screw—all metal.

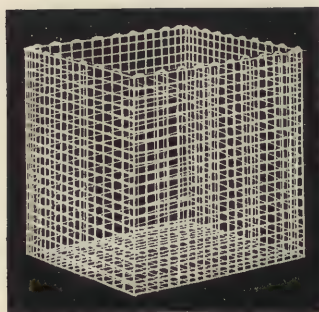
Polished brass, 4 ounces	\$0.40	7 ounces	60
Nickel-plated, 4 "	.60	7 "	75

2348. Copper alcohol lamp, 4 ounces, without screw, each **40**

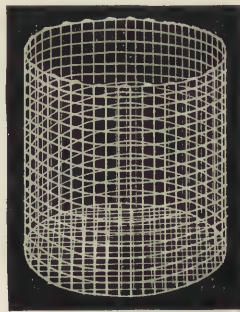
2350. Gas Stove.—For heating Arnold sterilizer; making culture media, etc.; nickel-plated, with brass cocks; tall feet.

One flame ring	2 50
Two flame rings	3 50
Three " "	5 00

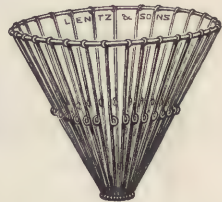
Wire Baskets and Funnels



No. 2352



No. 2354



No. 2340

- 2352. Wire Baskets** of galvanized wire, for holding test-tubes while sterilizing, 6 inches square **\$0 50**
- 2354.** With heavy strengthening wire round top. No solder used. 6 inches diameter **50**
- Special sizes to order.

PHILADELPHIA

Retort Stands, Clamps, and Test-Tube Racks



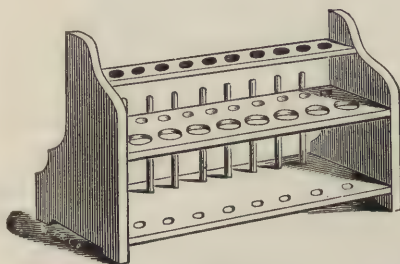
No. 2370



No. 2372



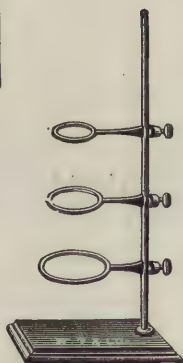
No. 2374



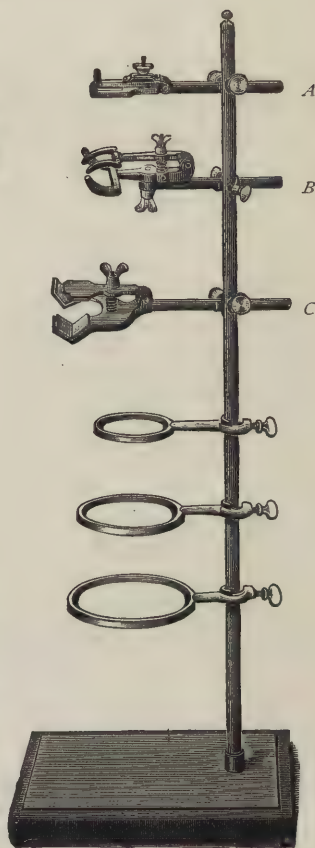
No. 2380



No. 2386



No. 2360



No. 2362

- | | | |
|-------|--|--------|
| 2356. | Retort Stand, Iron, with two rings. Square or triangular base | \$0 45 |
| 2358. | Retort Stand, larger, of superior make, well japanned, with 2 rings, brass screws | 65 |
| 2360. | Retort Stand, larger, of superior make, well japanned, with 3 rings, brass screws | 1 00 |
| 2362. | Retort Stand, extra heavy base and extra heavy rod, heaviest and most substantial support made, 3 rings, without clamps , | 3 00 |
| 2364. | A. Oswald's Clamp, for all sizes of tubes from $\frac{1}{8}$ to 2 inches diameter | 1 00 |
| 2366. | B. Universal Clamp, with swivel joints for holding irregular shaped apparatus in any position | 1 25 |

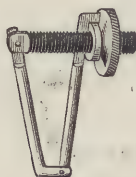
CHAS. LENTZ & SONS

2368.	C. Clamp to Hold Flasks, condensers, etc., lined with cork	\$1 00
2370.	Clamp for Burettes, with locknut to adjust position, cork-lined,	50
2372.	Clamp for Burettes, nickel-plated, with rubber guard	45
2374.	Hoffmann's Double Burette Clamp, to hold two burettes or other tubes, lined with cork.	75
2376.	Bunsen's Clamp, with universal movement for holding small or large apparatus, condensers, etc., lined with cork, complete, with fastener. Heavy, well made and japanned	1 75
2378.	Clamp Fastener, with two screws for attaching clamps to upright rod supports.	
	Small	25
	Large	30
2380.	Test-Tube Rack, for 18 $\frac{3}{4}$ -tubes, well made, oak	75
2382.	Test-Tube Rack, specially well made and neatly finished for 24 $\frac{3}{4}$ -inch tubes, in two rows. For stock cultures of bacteria, each	1 50
2384.	Test-Tube Rack, for 48 $\frac{3}{4}$ -inch tubes, each	2 50
2386.	Test-Tube Rack, compact and folded when not in use, $9\frac{1}{2} \times 3 \times 1\frac{3}{4}$, each	50

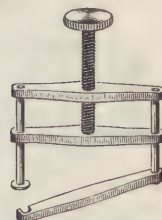
Compressors



No. 2388



No. 2392



No. 2394

2388. Spring Compressors—Mohr's—Nickel-plated.

	Small.	Medium.	Large.
Each	\$0.15	.20	.25
Per dozen	1.50	2.00	2.50

2390. Spring Compressors, patented.—Can be instantly opened or closed, and will remain in either position without pressure of the fingers, each \$0 35

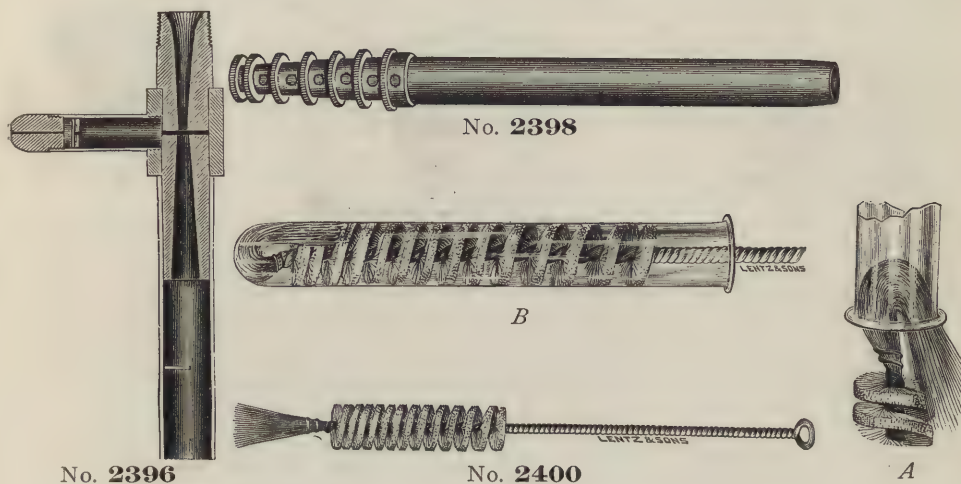
2392. Lever Screw Compressors.

Each	\$0.30	Per dozen	\$3.25
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2394. Screw Compressors—Hoffman's Improved form, Brass.

Each	\$0.25	Per dozen	\$2.75
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Filter Pumps, Cork Borers and Test-Tube Brushes



2396. Filter Pump—Chapman's Improved—Brass—Small, Neat and Efficient.

Small size	\$1.50
Large size	3.00
Screw coupling for attaching to spigot . . . . .	.40

2398. Cork Borers—Very Superior Make and Finish.

	1 to 3	1 to 6	1 to 9	1 to 12	1 to 15
Per set	\$0.60	1.10	1.50	2.00	3.00

2400. Lentz's New Test-Tube Brush.—The only brush made that will effectively clean the part of test-tube near the end. Bristles on sides are short and stiff, large tuft of extra long bristles at end, which is bent over when inserted. Extra heavy stiff handle, with large ring (not shown in cut), so that the brush is easily and comfortably grasped. Especially useful for "Board of Health" serum tubes.

For 4 x $\frac{1}{2}$ tubes, each	\$0.12
" 6 x $\frac{3}{4}$ " " . . . . .	.12

A shows method of introducing this brush by bending over the extra long tuft of bristles at end.

B shows brush in position for cleaning, which is done by simply rotating the brush without any rectilinear motion.

2402. Flask and Bottle Brushes.—Extra well made.

Each	\$0.50
----------------	--------

Agate Nickel Steel Ware, etc.



No. 2404



No. 2406



No. 2408

Agate Nickel Steel Ware for making culture media. This is the very best quality of agate ware made, being triple enamel coated on nickel steel at fusing-point, and is far superior in durability and finish to the single coated enamelled ware generally sold.

2404. Agate Nickel Steel Ware Double or Water-Bath Boiler.

Capacity of inside boiler, 2,500 c.c. \$2 00

2406. Agate Nickel Steel Ware Saucepan.

Capacity c.c.	1,000	3,000	6,000
Price, each	\$0.50	.75	1.00

2408. Agate Nickel Steel Ware Funnel.

Capacity, c.c.	250	500	1,000	2,000
Price, each	\$0.30	.40	.50	.60

2410. Lentz's Bacteriological Colony Selector.—A mechanical finger attachable to the nose-piece of a microscope with platinum needle. With this apparatus a very minute colony may be easily selected from an adjacent and different one in a Petri dish, and transplanted to a tube to obtain a pure culture at once

8 00

2412. Tape Measure.—Finest tempered spring steel, $\frac{1}{4}$ -inch wide, accurately divided into parts of inches on one side and millimeters on the other side.

5 feet long, each	1 35
6 feet long, each	1 50

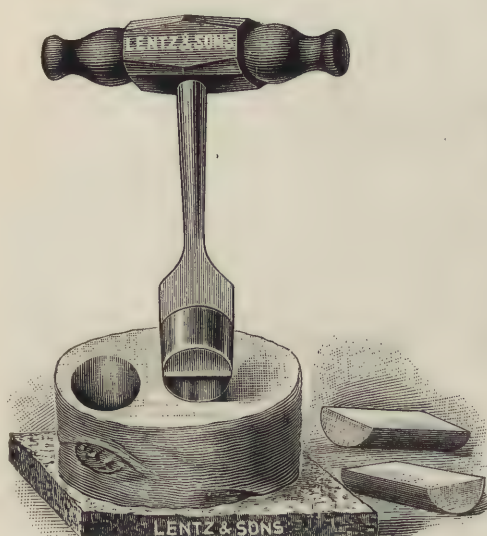
2414. Lentz's Improved Test-Tube Holder.—Has improved finger rests, nickel-plated wire, each

25

2416. Rotary Cork Compressor; japanned iron.

Small	50
Large	75

Potato Cutter, Trephines, etc.



No. 2418

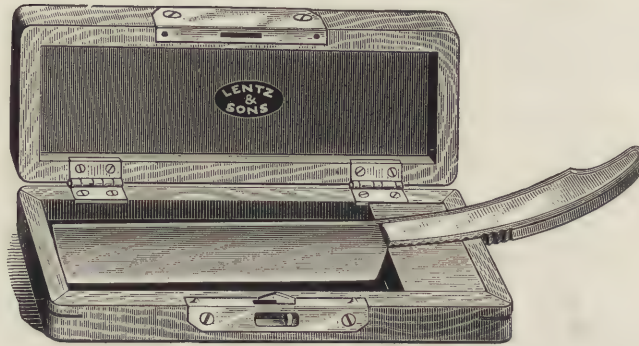


No. 2420



- 2418. Ravenel's Potato Cutter.**—Cutting portion consists of a sharpened cylinder of metal with sharpened septum, mounted in a strong handle and nickel-plated. Will cut a cylindrical portion from a potato and divide it in two with one thrust. Very useful for student use in laboratories. Price, **\$1 75**
- 2420. Trephine,** as used by Roux and others at Pasteur Institute, Paris, for trephining the skulls of rabbits, in rabies experiments, etc., with key for removing central point (diameter of trephine $\frac{3}{8}$ inch). Price **\$2 50**
- 2422. Trephine** with multiplying gear, aseptic, nickel-plated, as used by the late L. Pasteur **15 00**
- 2424. Heavy Tin Foil.**—The cotton plugs of the inoculated test-tubes or flasks are burned off at top and a small square of sterilized tin foil placed over the mouth and pressed down. This almost hermetically seals the tube and prevents evaporation, and drying of culture media and danger of contamination by moulds, etc., in the dust of laboratory working through the cotton plugs. Ravenel's method, per pound **25**
- 2426. Copper Caps** for placing over the necks of small flasks in laboratory, as used by Ravenel, each **10**
- 2428. Heavy Conical Glass** with round bottom, small, for macerating spinal cord in rabies experiments, as used by Pasteur, also New York Board of Health **25**

Bacteriological Needles, etc.



No. 2438



- | | | |
|-------|--|--------|
| 2430. | Ravenel's Bacteriological Inoculating Needle.—Heavy platinum needle fixed firmly into an aluminum rod. The whole reversible into the tubular glass handle for convenience and safety in carrying to autopsies, etc. The platinum does not break off at its juncture with the aluminum, as is always the case when the platinum is fused directly into a glass rod. Smaller in diameter, lighter and neater than the ordinary needle. Price, each | \$0 30 |
| 2432. | Ravenel's Bacteriological Inoculating Needle, with perforated spear-pointed needle, each | 40 |
| 2434. | Ravenel's Bacteriological Inoculating Needle.—Large spiral scoop needle for transferring growth on bullion cultures of tuberculosis in tuberculin manufacture ; not reversible, each | 50 |
| 2436. | Bacteriological Inoculating Needle.—Platinum wire fused into a tubular glass rod. Well made, light and strong | 35 |
| 2438. | Robb's Aseptic Razor.—For shaving horses and other animals at the site of inoculation ; in mahogany case
Easily cleaned and sterilized ; no joints for accumulation of septic matter. | 2 00 |
| 2440. | Bone-Cutting Forceps.—Small, well hardened and tempered, and very accurate jaws cutting to the tip. For dissection, etc., of guinea-pigs, etc. Straight or angular, price | 2 50 |
| 2442. | Faber's Wax Pencils.—Colored; for writing on glass ; Petri dishes, slides, tubes, etc., yellow or blue, each | 15 |

Dissecting Instruments for Biological Work.



2444. Fine Scalpels, with thin, delicate blades for fine animal dissection and for botany. **Manufactured in our own factory,** on the premises, and **hand-forged from the finest English steel procurable.** The quality is guaranteed, and they are far superior to the best of European manufacture. They must not be confounded with the cheap imported scalpels usually sold as first grade. They will take a keener edge and retain it longer than any of inferior quality. Fig. 1 is the most desirable shape.

Figs. 1, 2, 3, ebony handles, each \$0 50
 Fig. 4, ebony handles, double edge 60

2446. Fine Scalpels with heavier blades and ebony handles for general dissection and for heavier biological work. Same quality as above. Shape of Fig. 1, but larger.

Scalpel. Length of handle, 4 inches. Length of cutting edge, $1\frac{1}{8}$ inches, each 50

Scalpel. Length of handle, 4 inches. Length of cutting edge, $1\frac{1}{4}$ inches, each 50

Scalpel. Length of handle, 4 inches. Length of cutting edge, $1\frac{1}{2}$ inches, each 50

Scalpel. Length of handle, 4 inches. Length of cutting edge, $1\frac{3}{8}$ inches, each 50

2448. Tenaculum, Ebony Handle, each 50

Source: *Author's calculations*.

- ***Aseptic Scalpels**, with hollow metal handle, etc. See minor operating Scalpels in General Surgical Instrument Catalogue.



- each **10**

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- | | | |
|-------|---|--------|
| 2466. | Teasing Needles, hardwood handles, needle fixed , machine drilled and properly centered , each | \$0 10 |
| 2468. | Section Lifter, all metal, each | 20 |
| 2470. | " " aluminum wire, end rolled flat, each | 15 |
| 2472. | " " McFarland's, German silver, metal much heavier at shank (to prevent breaking) and tapering, so that the blade itself is thin and flexible, each | 40 |
| 2474. | Section Lifter, flexible, metal lighter at shank, each | 35 |
| 2476. | " " not flexible, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ -inch blades, each | 40 |
| 2748. | Section Razor, fine quality, flat on one side, each | 1 00 |
| 2480. | Blow-Pipes, each | 20 |
| 2482. | " " cheaper quality, each | 15 |
| 2484. | Hooks and Chain, each | 20 |
| 2486. | Complete Dissecting Set, as sold by us almost exclusively to the students of the Biological Laboratory, University of Pennsylvania for several years past, consisting of well finished leather pocket case containing 1 large and one small scalpel, 1 fine and 1 heavy scissors, cartilage knife, 1 pair fine and 1 heavy forceps, 2 needles in holders and blow-pipe. Instruments guaranteed, price | 4 00 |

Post-Mortem Case



- 2487. Post-Mortem Case.**—Small, and useful for carrying to autopsies. Contains Finnell's saw and knife to fit one handle; three scalpels; one steel handle cartilage knife; one pair scissors; one dissecting forceps; one tenaculum; one mallet; one chisel; one blow-pipe; chain and hooks; needles and thread. In mahogany case, leather-lined **\$12 00**

For list of more complete Post-Mortem Cases, see [General Surgical Instrument] Catalogue.

Microscopical Forceps, etc.



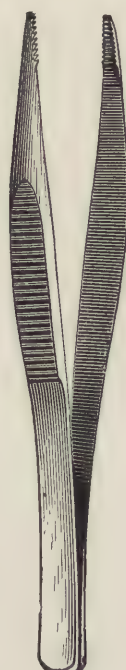
No. 2488



No. 2490



No. 2492



No. 2494



No. 2496

2488.	Forceps, medium, for microscopical work, each	\$0 50
2490.	Forceps, fine points, well made and finished, $4\frac{1}{2}$ inches long, curved	60
2492.	Forceps, fine points, well made and finished, $4\frac{1}{2}$ inches long, straight	50
2494.	Coxeter Forceps, for dissection, each	40
2496.	Forceps, microscopical, for students' use, each	25
2498.	Bone Forceps for animal dissection, well made and finished. Special size for cutting the vertebræ, etc., of guinea-pigs, price,	2 50

See General Surgical Instrument Catalogue.

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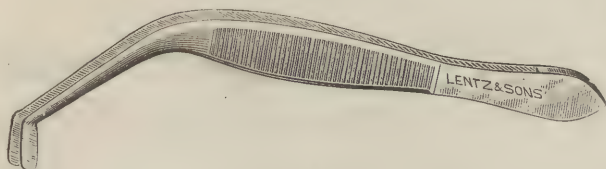
Staining Forceps.



No. 2500-2



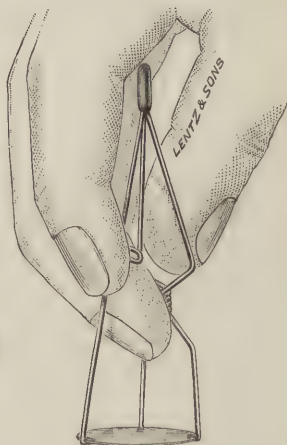
No. 2504



No. 2514



No. 2506



No. 2508

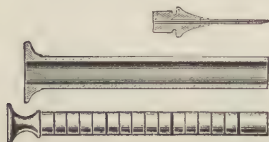
- | | | |
|--------------|--|---------------|
| 2500. | Lentz's Bacteriological Staining Forceps , of strong steel wire well nicked, with brass ring; for student use, each . . | \$0 12 |
| 2502. | Lentz's Bacteriological Staining Forceps .—Brass wire, nickel-plated; cannot rust; there are no better forceps made, each, | 15 |
| 2504. | Stewart's Bacteriological Staining Forceps .—We are the original manufacturers of this phenomenally popular forceps, which was the result of Dr. Stewart's ideas, and our suggestions, experiments and experience in manufacturing, steel wire, nickel-plated, each | 20 |
| 2506. | Novy's Bacteriological Staining Forceps , well made, nickel-plated, each | 65 |
| 2508. | Kyles' Cover-Glass Forceps .—Lift a cover-glass from a plane surface and hold it firmly for staining, each | 30 |
| 2510. | Kyles' Cover-Glass Forceps , self-retaining, each | 30 |
| 2512. | Cornet's Bacteriological Staining Forceps , each | 50 |
| 2514. | Ball's Cover-Glass Forceps .—Useful for immersing prepared cover-glasses in a dish of stain, or for floating them on the surface, each | 1 00 |
| 2516. | Ball's Cover-Glass Forceps , self-retaining | 1 50 |

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Aseptic Syringes, etc.



No. 2518



No. 2520



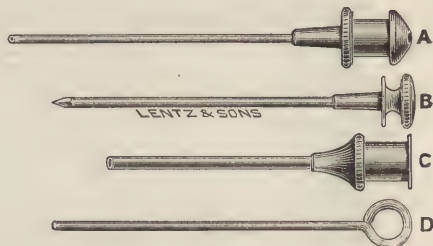
No. 2522



No. 2528



No. 2526



No. 2530

2518. Toxin Syringe, after Roux.—The best syringe for inoculation of toxin into animals. Used by Drs. Kneass, Pease, Pitfield, Ravenel, McFarland, Bolton and others. All parts detachable for sterilizing. The piston rod works on the principle of a hydraulic ram, expanding the rubber packing on pressure, so that the liquid cannot escape behind the plunger. In metal case, with two needles.

Easily taken to pieces for cleaning and sterilizing. Used at the Pasteur Institute, Paris, 2 c.c., price \$4 00
5 c.c., price 5 00

We appreciate the importance of a good toxin syringe in laboratories, and have experimented considerably in the matter, with the result that we believe the above is the very best that can be made for the purpose. It always gives satisfaction when not carelessly handled.

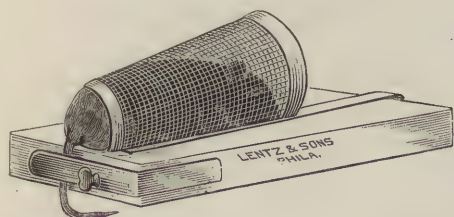
2520. Detmer's Robinson Aseptic Syringe.—All metal; only three pieces; no washers or packing; perfectly fitted; easily cleaned and sterilized; needle slips into barrel without thread; with two needles, in leather case 2 50

2522. Special Curved Needle, for attachment to Roux syringe for injecting macerated spinal cord from a rabid animal, under the dura or for experiments with tetanus.

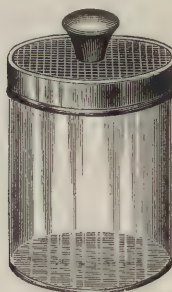
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- 2524. Solid Metal Syringe.**—Same description as No. 2520, **except needles**, which are inserted by a screw thread. In aluminum case **\$3 00**
- 2526. Antitoxín Syringe.**—Rubber packing can be tightened at any point in the barrel by turning milled end to the right. In metal case.
For injection of toxin, antitoxin, tuberculin, antistreptococcic, antitetanic, and antivenomous serums, etc. In metal case,
5 c.c. **2 50**
10 c.c. **2 50**
- 2528. Needle for Attachment** to tubing for toxin injection into horses. Used at Philadelphia Board of Health. Used also for bleeding. When ordering, state diameter of rubber tubing used . **60**
- 2530. Trocar Canula** for injecting toxin into horses and for drawing blood. Trocar B is inserted in Canula C, so that the point projects. It is thus inserted into the vein and the Trocar then removed. Rubber tubing from the toxin-injecting apparatus having previously been attached to Canula A, it is then introduced into Canula C now in the vein. By this method greater force can be used in inserting the needle and there is no danger of tearing the vein after insertion as there always is when a sharp-pointed needle is used. Per set **1 25**

Animal Holders.



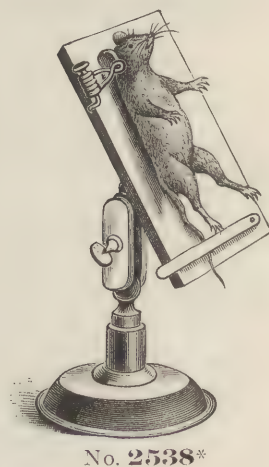
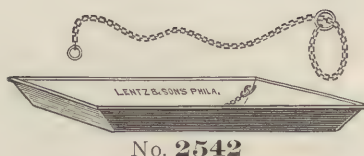
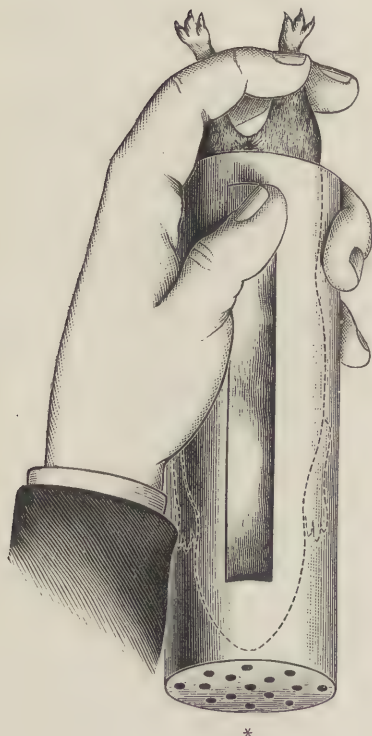
No. 2534



No. 2532

- 2532. Mouse Jars**, with galvanized iron top and weighted knob, each, **\$1 25**
Cheaper form, each **1 00**
- 2534. Lentz's Aseptic Mouse Holder.**—Constructed **entirely of metal**. Wire portion is detachable and can be replaced at small cost. Easily cleaned and sterilized when necessary.
Price **1 50**

Animal Holders, etc.



2536. Guinea-Pig Holder.—The slotted tube is placed on the table, slot side down; the animal enters and will remain in position till required for inoculation. The skin of the abdomen is raised with the fingers through the slot and the inoculating needle inserted. Requires only one operator.

We have recently modified this apparatus by strengthening the slotted end by means of heavy wire and turning the metal, thus doing away with the cross piece at the end into which the legs of the animal caught, preventing its easy removal.

Aluminum, 2 sizes, each	\$1 50
Zinc, 2 " "	1 00

2538. Kitasato's Rat Holder.—Made to order only, each 5 00

2540. Animal Holder, for larger animals, dogs, etc. 25 00
 " " " smaller " 18 00

Illustrations marked thus,* by permission, from Abbott's "Text Book of Bacteriology."

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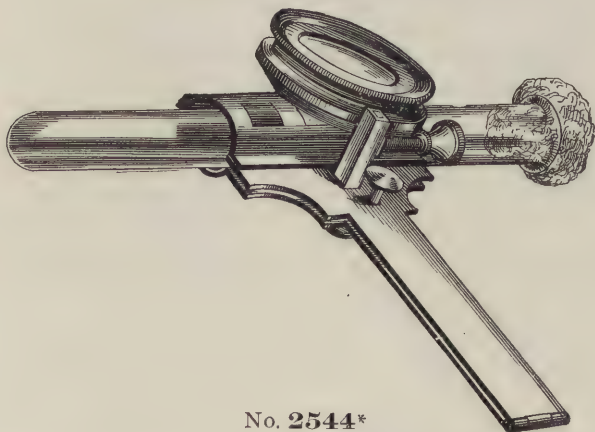
Animal Holders, etc.



No. 2540*

- 2542. Ravenel Dissecting and Operating Pan.**—A rectangular copper pan tinned inside, 17 x 10, provided with hooks at the corners. There are four brass chains supplied, each having a ring at both ends. A portion of the chain is put through the ring forming a noose which is drawn tightly around the animal's legs, the chain is then drawn taut and one of the links engages the hook. This is done at each corner with each leg of the rabbit or guinea-pig. Easily sterilized and kept clean, each \$2 50
- Larger size, for rabbits, useful in rabies experiments for holding animal while trephining, each 3 50

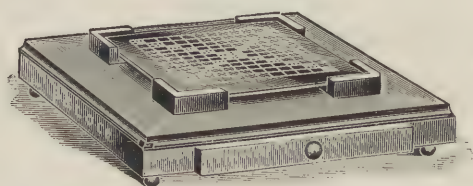
Apparatus for Counting Colonies of Bacteria.



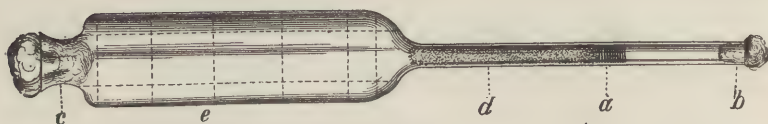
No. 2544*

- 2544. Esmarch's Apparatus,** for counting colonies on the walls of test-tubes in roll cultures, with sliding apertures of different size, and black metal background adjustable, with lens \$6 00

Apparatus for Counting Colonies of Bacteria, etc.



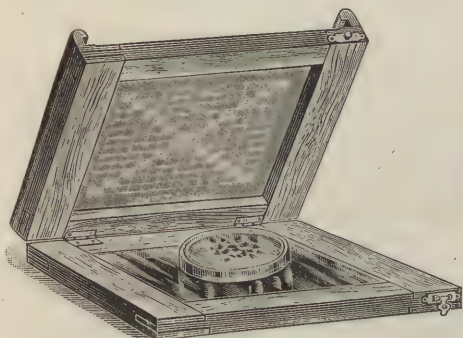
No. 2548



No. 2552*

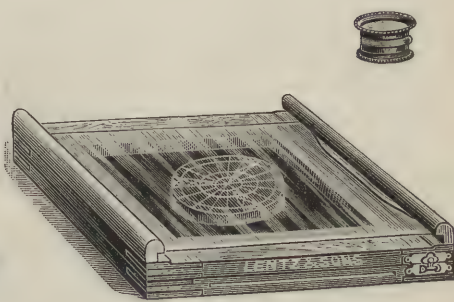
- 2546. Printed charts**, for counting colonies of bacteria in Petri dishes. The colonies are counted in one or more sectors and multiplied by the number of such sectors in the area of dish. Per dozen **\$0 60**
- 2548. Wolfhugel's Counting Apparatus** **3 50**
- 2550. Miller-McPherson Counting Apparatus**, for Petri dishes or Miquel flasks, as used by W. P. Mason, of the Rensselaer Polytechnic Institute, Troy, N. Y. **12 00**
- 2552. Sedgwick's Aerobioscope**.—A glass tube of large diameter, connected to a smaller tube at one end, and with a constriction and lip at other end, engraved into squares, with funnel. Each, **2 00**
- 2554. Lentz's Colony Selector**.—A mechanical finger attachable to the nosepiece of microscope, provided with platinum needle, so that an exceedingly minute colony can be selected from its closely packed neighbors in a Petri dish with little risk of contamination, saving time and the necessity of another inoculation in obtaining pure cultures of bacteria. Price **10 00**

Lentz's Modification of the Miller-McPherson Colony Counting Apparatus



No. 2556

OPEN, SHOWING WOLFHUGEL'S
CHART



No. 2556

CLOSED, PETRI DISH IN PLACE, SHOWING
LAFAR'S DIAGRAM

This apparatus, for estimating the number of colonies of bacteria in Petri dishes, was specially designed by us for water and milk analyses, etc.

No. 2556, the simpler form of this apparatus, is more compact and convenient than the Miller-McPherson counter, and there is no screw to adjust every time a dish is removed. The price also is much less, and colonies can be examined by reflected light, or the apparatus can be used in the vertical position (when the dish contains no liquefying colonies or when there is no objection to them running) and the colonies counted by transmitted light. **In any position, the springs (A) prevent any movement of the dish in its relation to the diagram.** A transparent dark-blue glass, or any other contrast background, can be employed. The cover is not removed from the dish, as in some other counting apparatuses.

No. 2558, the more expensive form, is constructed in the same manner as the above, but is provided with an **arrangement to permit inclination**, rendering protracted counts of numerous colonies less tedious to the bacteriologist. The colonies, with the apparatus in this position, can be examined either by reflected light when a black background (provided) is inserted immediately behind the dish, or by diffused and transmitted light from the tilting reflector, when a colorless transparent glass is inserted. The reflector is reversible, and is white on one side and dull-black on the other.

The adjustable **hinged screen** at top is blackened, and serves to protect the eyes of the bacteriologist from the glare of diffused light from laboratory window.

This apparatus is also intended for use in the horizontal position with black or dark-blue background.

In any position it is impossible for the dish (no matter what its size or thickness) to slip from its position with regard to the etched diagram after having been clamped, and there is therefore no danger of error in estimations through double counting from this cause.

The complete apparatus folds neatly, and is about the size of the Wolfhugel's apparatus now generally employed.

CHAS. LENTZ & SONS

The diagrams are **accurately** etched on the **best polished patent plate glass** about $\frac{1}{8}$ inch thick. They are removable and interchangeable. Wolfhügel's rectilinear diagram is provided, or Lafar's diagram of concentric circles divided into equal sectors, with subdivisions to aid in counting small and numerous colonies.



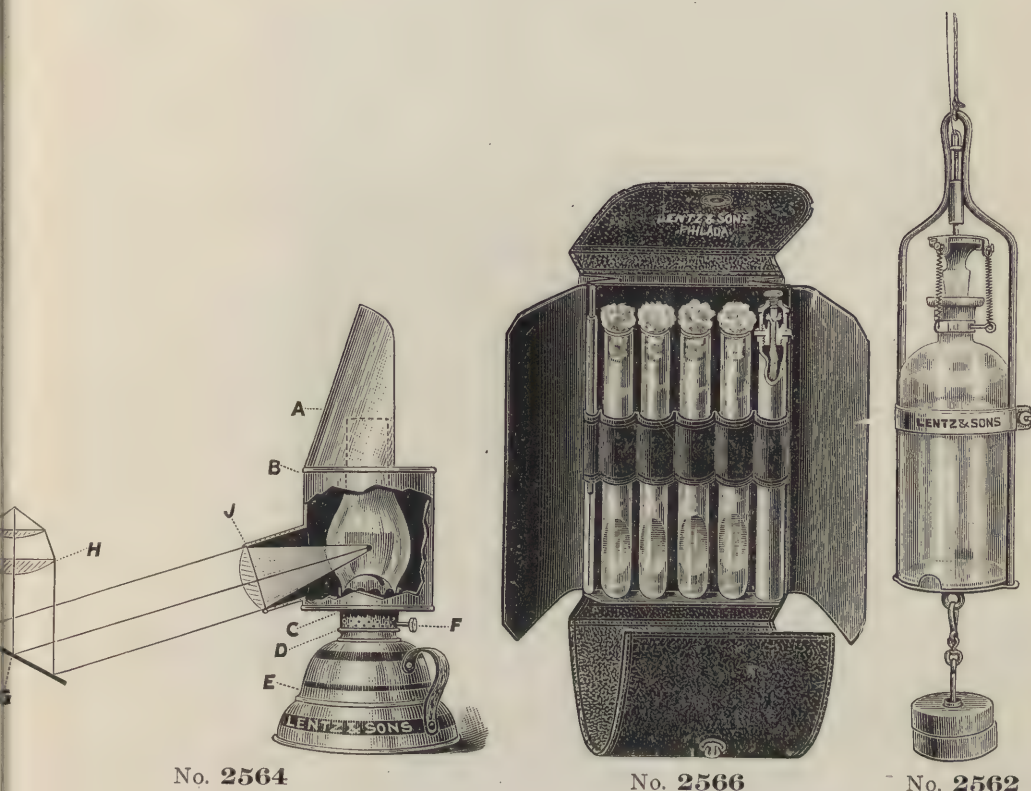
No. 2558

2556.	With one etched plate (Wolfhügel's diagram), without lens . . .	\$5 50
2556.	With one etched plate (Lafar's diagram), without lens	8 50
2558.	With one etched plate (Wolfhügel's diagram), without lens . . .	7 50
2558.	With one etched plate (Lafar's diagram), without lens	10 00
2556.	With both etched plates	10 50
2558.	With both etched plates	12 00
	Tripod Magnifier (not achromatic), extra	50
2560.	Achromatic magnifier (as shown in cut), giving exceptionally large field and excellent definition, extra	7 50

Although this apparatus is not constructed for miquel flasks (as they are seldom used in this country), they can be employed by inserting a hard rubber plate, with circular aperture, behind diagram, in slot provided. The colonies are then counted with the flask in an inverted and inclined position. Hard rubber plate, extra

1 00

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No. 2564

No. 2566

No. 2562

- 2562.** Apparatus for obtaining bacteriological and chemical samples of water in reservoirs, etc., at different depths, as made by us for Dr. A. C. Abbott, Philadelphia Board of Health, etc. Also for Baltimore Board of Health, etc. \$10 00

- 2564.** The Stengel Lentz Microscope Lamp.—Constructed for Dr. Alfred Stengel, Pepper Clinical Laboratory, Philadelphia. No adjusting or tilting required. Gives an intense light suited for bacteriological work, easily modified for urinary and other clinical work. Ground and polished lens 2 50
- Revolves so that edge or broadside of flame can be used.

The light is so intense with this lamp that the user is compelled to reduce it by means of the iris diaphragm in the substage of the microscope, thus utilizing the central and best portion of the lens system of his objectives, increasing the penetration, definition and flatness of field wonderfully, and making the condenser more aplanic.

- 2554.** Carl Vischer's Pocket Case, containing four culture tubes, Ravenel reversible platinum needle and small non-leakable nickel-plated alcohol lamp; for obtaining cultures for diagnosis, etc. 3 50

CHAS. LENTZ & SONS

Bacteriological Test Set

ARRANGED BY DR. CHARLES O. MAISCH.



No. 2567

In combination with a suitable microscope and its appurtenances, this set forms a complete apparatus for ordinary bacteriological tests, and is adapted for use by chemists, physicians or students. The outfit, which comprises the articles named below, is enclosed in a handsome case of polished mahogany, with drawer. The dimensions of the case are 15 x 10 x 9 inches. The set, as now modified by us, contains:

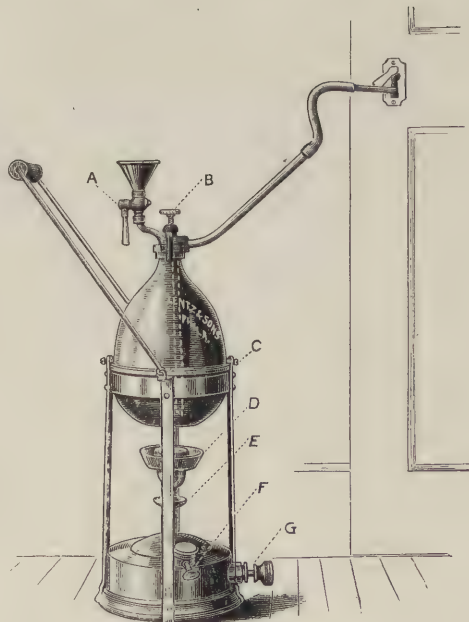
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|---|---|
| 8 1¼-ounce Wide Mouth Bottles, fitted with perforated Soft Rubber Stoppers and Tube Pipettes. | 50 Cover-Glasses. |
| 6 1-ounce Glass Stoppered Reagent Bottles. Engraved Names. | 1 5-inch Glass Stirring Rod. |
| 6 4-ounce Glass Stoppered Reagent Bottles. Engraved Names. | 1 Extra Tube Pipette. |
| 3 Glass Boxes with Glass Lids. | 1 2¼-inch Evaporating Dish, Dark Glass. |
| 1 1½-ounce Glass Spirit Lamp, complete. | 1 2¼-inch Evaporating Dish, Berlin Porcelain. |
| 1 Balsam Bottle. | 1 Platinum Inoculating Needle. |
| 1 Conical Test Glass. | 1 2-inch Glass Funnel. |
| 1 60 c.c. Graduate. | 1 Adjustable Metal Funnel Holder. |
| 1 3-ounce Tall Beaker. | 1 Zinc Tray, 8½ x 13¼ inches. |
| 4 5-inch Test-Tubes. | 1 Pair Staining Forceps. |
| 25 Slides. | 1 Copper Heating Plate. |
| | 1 Pack 4-inch Filter Paper. |
| | 1 Sheet Gummed Labels. |
| | Blotting Paper. |

Price \$12.00

PHILADELPHIA

- 2568. Dr. H. D. Pease's** carrying case, for conveniently conveying three large bottles of antitoxic serum (or antitoxic blood) from stable to laboratory, when the latter is situated at some distance from the former. The outside appearance is that of a well-made dress-suit case. Provided inside with straps and felt covers to protect bottles from breakage, and two metal boxes for sterilized instruments, syringes, tubing. Empty bottles can be sterilized in laboratory and brought back filled without contamination. As used by Philadelphia Board of Health. Price, complete, with bottle. **\$15 00**
- 2570. Apparatus** for retaining samples of water contained in eight 2-ounce glass bottles at low temperature, to prevent growth of micro-organisms while being conveyed from river or other source to laboratory. Consisting of rectangular zinc ice chamber with cover, loops on two sides for bottles. The whole is covered with a cloth wrapper, and is of sufficient size to place in a surgeon's cabin bag. Price, without bottles, **5 00**

Lentz's Formaldehyde Gas Disinfector



No. 2572

A Practical and original apparatus for thorough disinfection of rooms, hospital wards and clothing. **No longer in the experimental stage.**

CHAS. LENTZ & SONS

A solution of formaldehyde and 10 per cent. of glycerin is placed in the retort and the burner ignited. The formaldehyde gas is then liberated through the keyhole in great volume.

Portable, strong, durable and absolutely effective. Used by **nearly every hospital in Philadelphia, and by numbers of other hospitals, Boards of Health and Physicians,** - throughout the United States. Every disinfectant has given perfect satisfaction. Used with success by the United States War Department, Philadelphia and Washington Boards of Health, etc. Price **\$12 00**

Weight of complete apparatus, empty 6 pounds.

Weight of complete apparatus, filled 10 pounds.

Capacity of retort 4 pints.

Apparatus is constructed entirely of copper and brass.

We have received testimonials with reference to the practical work done with this disinfectant from many eminent men of authority, including Dr. Geo. M. Sternberg, Surgeon-General United States War Department.

[COPY]

WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE,
WASHINGTON, December 10, 1898.

Messrs. Chas. Lentz & Son,

18 and 20 North Eleventh Street, Philadelphia, Pa.

GENTLEMEN :—Referring to your letter of December 5th, asking in regard to formaldehyde gas generator left by you for experiment, the Surgeon-General directs me to say that the officer reports very favorably upon its action upon the bacillus of typhoid fever and of diphtheria, and that the apparatus is easily managed and quite portable. Several have already been purchased of you.

Very respectfully,

(Signed)

C. H. ALDEN,
Assistant Surgeon-General, U. S. Army.

NEW YORK BOARD OF HEALTH, March 20, 1899.

“I like the ease and rapidity with which disinfection can be carried out with it.”

W_{M.} H. PARK.

SARANAC LAKE BOARD OF HEALTH, January 27, 1899.

"The apparatus has given entire satisfaction and enabled me to disinfect several entire cottages with facility, which I was never able to do in a satisfactory manner before receiving your device."

E. S. McCLELLAN.

Complete descriptive pamphlet will be mailed on application.

Berkefeld Bacteria Proof Filters

No. **2582.** WITH PUMP
AND FLASK.

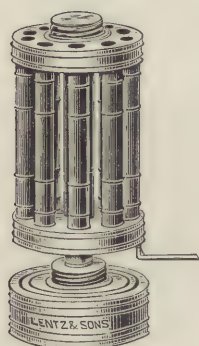
2574.	H ₂ Filter. Capacity about 1 gallon in 3 to 5 minutes at ordinary pressure of 40 pounds. (Rate of delivery depends upon character of unfiltered water), nickel-plated, price	\$4 00
2576.	H ₂ B. Capacity about 1 gallon in 2½ to 10 minutes, price	6 00
2578.	H ₁ . " " 1 " 2 " 16 " "	8 00
2580.	Double way cock and outlet pipe for obtaining unfiltered or filtered water at pleasure without removing filter (filtration upward), extra .	2 00
	Extra cylinders for above, with screw coupling H ₂	1 50
	" " " " " " H ₂ B	2 00
	" " " " " " H ₄	2 50

Size I.	Cylinder, 10	x 2 inches,	price	5 25
" II.	"	8 x 1	" "	4 25
" III.	"	2½ x 5	" "	2 00

Size I.	Price	3 50
“ II.	“	3 00
“ III.	“	1 25

For complete description and list of larger filters for hospital purposes and bacteriological reports, write for special pamphlet.

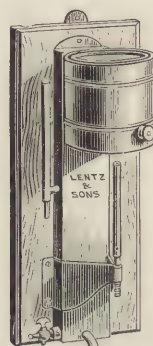
Water Stills and Condensers



No. 2584
ROCHESTER BASE



ARNOLD BASE



No. 2586
DOMESTIC WATER STILL

2584. These Stills are made entirely of copper, and consist of two parts, the base or boiler, and condenser. They can be used on any kind of stove or burner. The condenser is set in the base, which is to be filled with water and put on a stove. The steam generated passes up through the central tube to the top of the condenser and is there distributed into the condensing tubes. These tubes are double, and the steam which is forced through the small space next to the air between the outer and inner tubes is rapidly condensed and accumulates in the drum at the bottom of the tubes and runs off through the drip-pipe into a bottle or other container. One quart of distilled water can be produced every thirty to forty-five minutes, according to the temperature of the room.

They are made with two kinds of bases. The Rochester, or plain base, is recommended if the apparatus is to be used for reclaiming alcohol, or other purposes than water. If to be used for water only, the Arnold quick steaming base is advised, because it is more rapid.

No running water or other artificial means for condensing is required.

Price complete, with either Rochester or Arnold base	\$15 00
Water level can be attached to Arnold base, extra	1 00

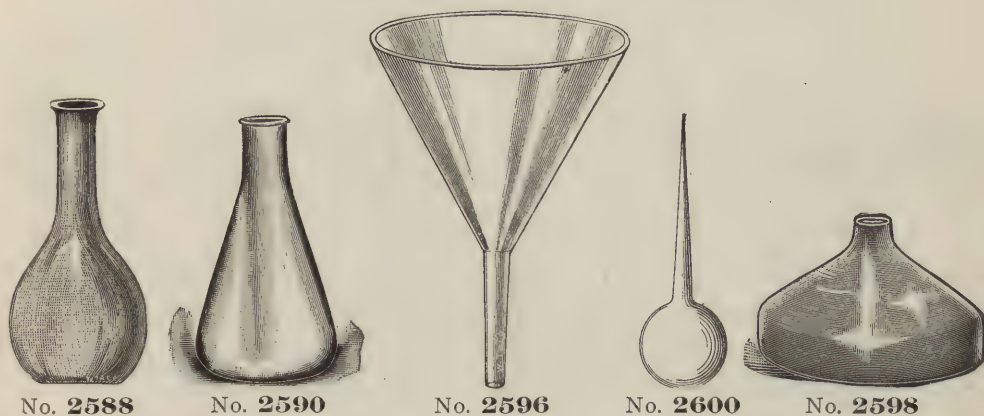
When ordering, designate which base is wanted.

2586. Domestic and Laboratory Water Still.—Copper. The water is supplied to this still by means of a rubber tube connecting with an ordinary water faucet. The overflow is discharged through another rubber tube to the sink. It is heated by a bunsen burner, as illustrated.

Size A, 16 inches long. Burner consumes 6 feet of gas per hour. Produces about $\frac{1}{2}$ gallon per hour, price	\$15 00
Size B, 18 inches long. Burner consumes 14 feet of gas per hour. Produces about 1 gallon per hour, price	25 00

These stills require no watching.

Flasks, Funnels, etc.



2588. Florence Flasks.—Best Bohemian Glass.

1 oz.	2 oz.	3 oz.	4 oz.	6 oz.	8 oz.	12 oz.	pint.	1½ pt.	quart.	½ gallon.
\$0.09	.10	.11	.12	.15	.18	.20	.25	.30	.35	.50

Special prices for quantities.

2590. Erlenmeyer's Flasks.—Best Bohemian Glass.—Kavalier's.

1 oz.	2 oz.	4 oz.	6 oz.	8 oz.	12 oz.	16 oz.	24 oz.	32 oz.	½ gallon.
\$0.10	.12	.15	.20	.25	.30	.35	.40	.45	.70

Special prices for quantities. Prices of Schott glass flasks on application.

2592. Wash Bottles, with Rubber Stoppers.

8 oz.	12 oz.	16 oz.	24 oz.
.40	.45	.50	.60

2594. Funnels, Glass.—Correct Angle.

1 oz.	2 oz.	4 oz.	8 oz.	pint.	quart.	½ gallon.	1 gallon.
2	2½	3½	4½	5½	7	8½	10½ in. diameter.
\$0.12	.12	.16	.20	.25	.30	.40	.60

2596. Funnels, Glass, best Hand-Made.

1 oz.	2 oz.	½ pint.	½ pint.	1 pint.	1 quart.	½ gallon.
\$0.15	.15	.18	.24	.28	.40	.60

2598. Antitoxin Flask, Fernback, capacity 2000 c.c., of the best white glass.

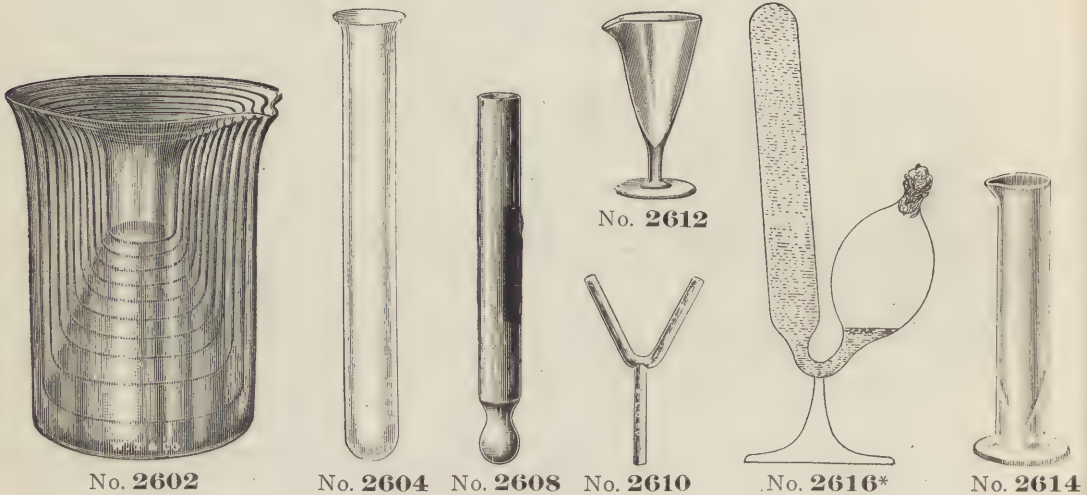
Each	\$1 25
Per dozen	12 00

We have listed only the plain Fernback flask, as those with sidenecks have been found too liable to contamination for practical work.

2600. Sternberg Bulbs.—Glass bulb with long drawn-out point. For obtaining samples of water, blood, etc., after sterilization, by negative pressure, each

20

Beakers, Test-Tubes, etc.



2602. Beakers—Griffin Form.—Best Bohemian with Lip.

No.	oo	0	1	2	3	4	5	6	7	8	9
Capacity	1½	2½	5	8	12	20	25	40	50	64	75
Price	\$.09	.10	.12	.18	.25	.30	.40	.50	.60	.70	.80

In nests of 5, Nos. oo to 3, per nest \$0 65

In nests of 4, Nos. 1 to 4, per nest 80

In nests of 6, Nos. 1 to 6, per nest 1 55

2604. Test-tubes, of Best German Glass, well Annealed, will not crystallize.

Length, inches.	Width, inches.	Per dozen.	Per gross.
3	$\frac{3}{8}$	\$0 20	\$1 75
4	$\frac{1}{2}$	25	2 50
5	$\frac{1}{2}$	30	2 75
5	$\frac{5}{8}$	30	3 00
6	$\frac{5}{8}$	30	3 00
6	$\frac{3}{4}$	30	3 00
7	$\frac{7}{8}$	50	5 00

Test-tubes, as above, in nests of 3, per set 15

Test-tubes, as above, in nests of 6, per set 25

2606. Test-tubes, with ground glass cap and small tubulature, per dozen 5 00

2608. Potato tubes, each 10

2610. Glass Y tubes for ¼-inch rubber tubing, each 15

2612. Test-glass for urine, etc.

2 OZ. 25

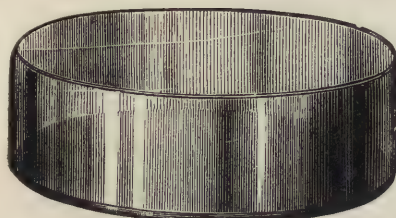
4 OZ. 30

2614. Test-glass, very heavy, cylindrical, 1¼ x 8½, each 1 00

2616. Fermentation-tube, to show production of gas by yeasts and bacteria, each 30

PHILADELPHIA

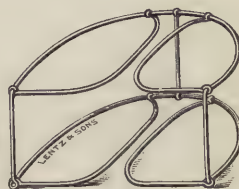
Petri Dishes, etc.



No. 2628



No. 2618



No. 2626

- 2618. Petri Dishes** for student or general bacteriological work, 10 cm. diameter.

Each	\$0 25
Per Dozen	2 50
Per Gross	25 00

- 2620. Petri Dishes**, better grade for general bacteriological work, clear, well annealed and comparatively free from bubbles and striations; well ground; 10 cm.

Each	30
Per Dozen	3 00
Per Gross	30 00

- 2622. Petri Dishes**, finest grade, heavy dish, well ground and well annealed, flat, clear, without bubbles, and almost free from striations. Special for finest work, water analysis and accurate colony, counting 10 cm. diameter.

Each	35
Polished top and bottom, per dozen	3 50
“ “ “ “ per gross	35 00

- 2624. Petri Dishes.**

6 cm. diameter, each	20
6 “ “ per dozen	2 40
8 “ “ each	24
8 “ “ per dozen	2 75

- 2626. Ravenel's Petri Dish Holder.** Of steel wire, nickel-plated, all joints **brazed**. An excellent holder or clamp for three dishes.

Price, each	50
For five or six dishes, 10 cm., price, each	60

Especially useful in water and milk analysis.

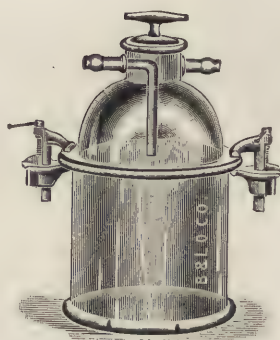
- 2628. Heavy Glass Dishes.** Size, 9 inches diameter, for attaching a wooden clothes-peg with hole drilled to receive tubing. After Ravenel. A very useful receptacle is thus formed for the laboratory table to receive the drippings from distilled water bottle placed higher on a shelf, or to catch the drip when staining slides and covers. A Mohr's pinchcock and glass tube drawn to a point not shown in cut, is required to make this complete. Each

1 25

Anaerobic Jars



No. 2630



No. 2632



No. 2634

2630. Anaerobic Jar, devised by Mazyck P. Ravenel, M.D., Bacteriologist to the State Live Stock Sanitary Board of Pennsylvania, etc.

Consists of a well annealed glass cylindrical jar with constriction dividing it into two chambers, which communicate. Size of upper chamber (inside) 7 x 3 inches; diameter of mouth, 1.5 inches; size of lower chamber, 3 x 2 inches. The inoculated test-tubes (preferably 6 x $\frac{3}{8}$ inches) are placed in the upper chamber and are supported by a wire gauze partition (upon which a layer of cotton is placed) which rests upon the shoulders of the constriction in jar. The jar having been closed, an alkaline solution of pyrogallic acid is introduced into the lower chamber up to the opening of tube. "This tube is then at once connected with the air-pump, and the upper tube with a hydrogen generator, the stopper B being so turned as to close the jar. When the air has been exhausted, as indicated by the vacuum meter, the lower stopcock is closed and the jar filled with hydrogen. The hydrogen is then cut off and the jar again exhausted and again filled with hydrogen, the process being repeated three times in order to make sure of all the hydrogen being removed. The jar is then sealed above and below, and placed in the incubator." The size of this jar renders it very convenient for placing in the incubator, and there is no central glass tube to interfere.

A, outline cut of jar complete.

B, represents section of stopper showing inlet for hydrogen. Drawn to larger scale than A.

- | | |
|---|---------------|
| 2632. Novy's Apparatus , for Petri dish cultures of anaerobic bacteria,
size of lower chamber 130 mm. x 130 mm., each | \$4 00 |
| 2634. Novy's Apparatus , for tube cultures, for hydrogen or pyrogallate method, 100 mm. inside diameter for tubes up to 150 mm. long, each | 2 50 |
| 2636. Novy's Apparatus , diameter 80 mm. for tubes up to 125 mm. long | 2 25 |

PHILADELPHIA

Museum Jars, etc.



No. 2638



No. 2640



No. 2642



No. 2644

2638—

Width of Mouth.	Height without Lid.	Capacity. (approximate).	Each.
2 1/4	4 inches.	1/2 pint.	\$0 42
2 1/4	6 "	3/4 "	46
2 1/4	8 "	1 "	50
2 1/4	12 "	1 1/2 "	59
2 1/4	18 "	2 1/4 "	73
3 1/2	6 "	1 3/4 "	75
3 1/2	8 "	2 1/2 "	84
3 1/2	12 "	4 "	88
3 1/2	18 "	6 "	1 12
5 1/8	8 "	2 3/4 quarts.	1 30
5 1/8	12 "	4 "	1 46
5 1/8	15 "	5 "	1 63
5 1/8	18 "	6 "	1 80
6 1/4	8 "	1 gallon.	1 67
6 1/4	12 "	1 1/2 "	1 92
7 5/8	8 "	1 1/2 "	2 50
7 5/8	12 "	2 1/4 "	2 92
7 5/8	15 "	2 3/4 "	3 17
7 5/8	18 "	3 1/2 "	3 34
7 5/8	24 "	4 1/2 "	3 92
7 5/8	36 "	7 "	6 92
11 1/2	12 "	4 3/4 "	8 33
11 1/2	18 "	7 1/4 "	10 42
11 1/2	24 "	10 "	12 50

Special discount on above to laboratories, hospitals and physicians.

CHAS. LENTZ & SONS

- 2640. Specimen Jars**, with spring wire clamp or handle made air-tight by a rubber ring.

	8	10	16	24 ounces.
Each	\$0.10	.14	.16	.20
Per dozen	1.00	1.35	1.60	2.00

- 2624. Bell Jars**, of heavy clear white glass, well made, for covering microscopes, etc.

2 gallon size	13½ inches high,	7¼ inches diameter inside	\$2 00
3 " "	15¼ " "	9 " " "	3 00

- | | | | |
|--------------|-------------------|---|-------------|
| 2644. | Bell Jars, | low form, ground bottom, 4 inches diameter | 50 |
| “ | “ | “ “ “ “ 6 “ “ | 75 |
| “ | “ | “ “ “ “ 8 “ “ | 1 25 |

- 2646. Naples' Staining and Reagent Jars,** for 3 x 1 slides, each . . . **20**

- | | | |
|--------------|--|-------------|
| 2647. | Stone Jars, for laboratory refuse, 4 gallon, each | 1 25 |
|--------------|--|-------------|

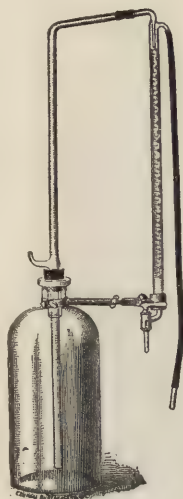


No. 2658

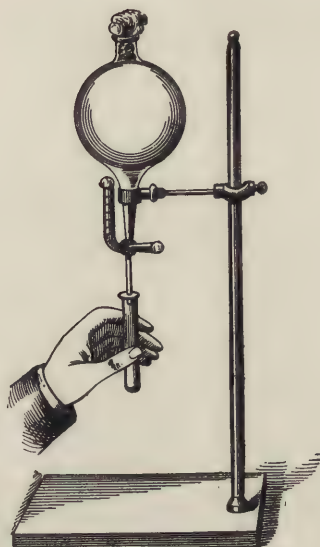
Showing method of using No. 2658.†

† Illustration, by permission, from MCFarland's "Text-book of the Pathogenic Bacteria."

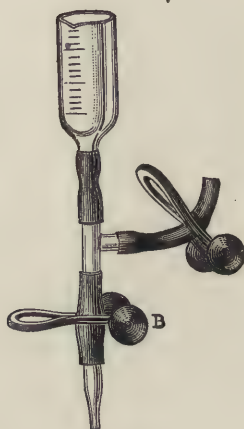
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No. 2648



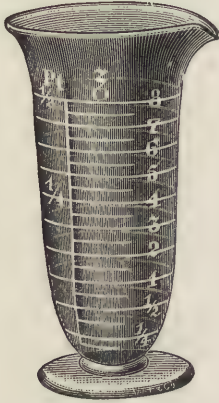
No. 2656*



No. 2659

- 2648. Automatic Zero Burette and Clamps**, essential for accurate phenolphthalein tests, etc. The liquid is drawn over the syphon tube by suction on the rubber tube until the burette is filled past the zero mark, when suction is stopped and the liquid will run back into the bottle, leaving the column in the burette exactly at zero.
- | | |
|--|--------|
| Price, Complete, 25 c.c. in 1/10 | \$4 50 |
| " " 50 c.c. in 1/10 | 5 00 |
- 2650. Graduated Bottle for injecting** a measured amount of toxin into horses, with double hand bulb, nickel-plated stopper, clamp, tubing, stopcock and needle. As used by Philadelphia and Baltimore Boards of Health, etc. **10 00**
- 2652. Burette, with three-way stopcock, for filling antitoxin bottles.** The antitoxin runs into the burette by a turn of the stopcock, and the measured amount is emptied into the bottle by another quarter-turn of the same stopcock. As used by H. K. Mulford & Co., Philadelphia **4 00**
- 2654. Pease's Apparatus for Aseptic Filtration of Antitoxin.** As used by Philadelphia Board of Health. Absolutely no risk of contamination. Price **10 00**
- 2656. Apparatus for filling test-tube with a measured amount of culture media,** consisting of glass bulb, burette and stopcock complete **6 00**
- 2658. Hill's Double Outlet Tube,** of glass, for attachment to funnel when filling tubes with media. Prevents wetting the mouth of tube, and thus prevents the sticking of the cotton plugs. Price **25**
- 2659. Burette Attachment for Refilling.**—With pinch cocks . . . **60**

Graduates, etc.



No. 2660



No. 2662



No. 2664



No. 2670

2650. Graduates of Glass.—Cone-shaped, graduated all around.

1 drm. 2 drm. $\frac{1}{2}$ oz. 1 oz. 2 oz. 3 oz. 4 oz. 6 oz. 8 oz. 12 oz. 16 oz. 24 oz. 32 oz.
60 min. 120 min.

Each . \$0.25 .28 .23 .24 .28 .32 .35 .42 .50 .60 .75 1.00 1.25

2662. Graduated Cylinders.—Best make, accurately graduated, with foot, lip and pour-out.

Contents . 5 10 15 25 50 100 200 250 300 500 1,000 C.C.
Each . \$0.25 .30 .35 .45 .60 .80 1.00 1.25 1.50 1.75 2.50

2664. Pipettes, Volumetric.—Accurately graduated.

Capacity . . . 2 3 5 10 15 20 25 50 100 200 C.C.
Each . . \$0.10 .12 .15 .20 .25 .30 .35 .40 .60 1.00

2666. Pipettes, Straight.—Drawn to an end, not graduated.

Length 5 6 7 8 10 12 15 20
\$0.05 .05 .05 .06 .07 .08 .10 .10

2668. Pipettes, Mohr's.—Graduated in parts of cubic centimeters.

$\frac{1}{2}$ c. c. in $\frac{1}{100}$ 1 c. c. in $\frac{1}{100}$ 1 c. c. in $\frac{1}{10}$ 5 c. c. in $\frac{1}{10}$ 10 c. c. in $\frac{1}{10}$
\$0.60 .35 .50 .65
20 c. c. in $\frac{1}{10}$ 25 c. c. in $\frac{1}{10}$ 50 c. c. in $\frac{1}{10}$ 50 c. c. in $\frac{1}{10}$
\$0.80 .90 1.00 1.25

2680. Burettes, Mohr's.—Best German.

100 c. c. in $\frac{1}{10}$ 50 c. c. in $\frac{1}{10}$ 30 c. c. in $\frac{1}{10}$ 25 c. c. in $\frac{1}{10}$ 25 c. c. in $\frac{1}{10}$ 10 c. c. in $\frac{1}{10}$
\$1.75 1.20 1.00 .90 .80 .70

Dropping Bottles, etc.



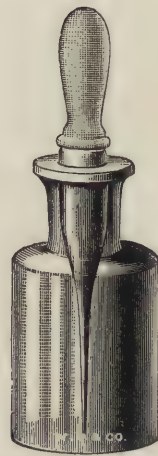
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No. 2684



No. 2686



No. 2692



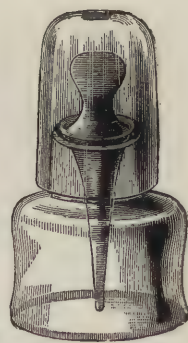
No. 2696



No. 2700



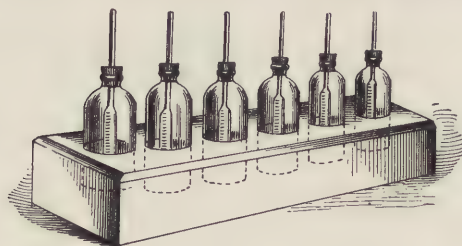
No. 2694



- | | | |
|--------------|---|---------------|
| 2682. | Dropping Bottle, pipette stopper, ground to fit neck, rubber top,
30 c.c. | \$0 30 |
| 2684. | Dropping Bottle, with glass ball and aperture at top, to be
closed by the finger | 25 |
| 2686. | Dropping Bottle, German form; round or square; a quarter
turn of the stopper closes the bottle, 30 c.c., each | 20 |
| | 60 c.c., each | 25 |
| 2688. | Dropping Bottle, Patent T. K.; flat stopper; a quarter
turn of the stopper closes the bottle, 50 c.c., each | 40 |
| 2690. | Dropping Bottle, with volume pipette running through cork in
neck of bottle, 30 c.c., each | 20 |
| | 60 c.c., each | 25 |
| 2692. | Dropping Bottle, with rubber nipple bulb, 30 c.c., each | 20 |

CHAS. LENTZ & SONS

2694. Balsam Bottle, with glass dropper, fitting loosely into neck and ground glass cap, 30 c.c. \$0 25
2696. Cedar Oil Bottle (small), in brass case, B. & L.'s 50
2698. Cedar Oil Bottle, 1 ounce capacity, with glass rod fixed into wide-mouth stopper 50



No. 2704*

2700. Zeiss's Cedar Oil Bottle, with metal cap; unspillable, each . . . 85
2702. Laboratory Reagent Case, with eight dropping bottles, No. 2684 or No. 2686, and Canada balsam bottle, with bell jar, complete 3 00
2704. Laboratory Table Set, of six staining bottles, with pipette stoppers, including finished wood rack, each 2 50

* Illustrations marked thus from Abbott's "Text-book of Bacteriology."

PHILADELPHIA

Bottles



No. 2706



No. 2708



No. 2712

2706. Bottles, Pure White Glass, with mushroom stoppers; narrow mouth; elegant shape.

	1 oz.	2 oz.	4 oz.	8 oz.	16 oz.	32 oz.	$\frac{1}{2}$ gal.	1 gal.	2 gals.
Per dozen . . .	\$1.00	1.35	1.50	1.75	2.00	2.25	4.00	6.00	13.00

2706. Bottles, Pure White Glass, wide mouth.

	1 oz.	2 oz.	4 oz.	8 oz.	16 oz.	32 oz.	$\frac{1}{2}$ gal.	1 gal.	2 gals.
Per dozen . . .	\$1.35	1.50	1.75	2.25	2.50	3.25	4.00	8.00	18.00

2708. Bottles, Narrow Mouth, accurately ground flat stoppers, heavy glass, fine finish, without lead, round shoulders. Particularly adapted for chemical reagents. German.

	1 oz.	2 oz.	4 oz.	8 oz.	16 oz.	32 oz.
Per dozen	\$1.25	1.50	1.75	2.00	2.75	3.85

2708. Bottles, Wide Mouth.

	1 oz.	2 oz.	4 oz.	8 oz.	16 oz.	32 oz.
Per dozen	\$1.50	1.75	2.00	2.25	3.25	4.50

2710. Bottles, of best Bohemian glass, with large flat cut-polished stoppers. A handsome, well-made bottle.

	1 oz.	2 oz.	4 oz.	6 oz.	8 oz.	12 oz.	16 oz.	32 oz.
Per dozen . . .	\$1.60	1.80	2.25	2.65	3.00	3.75	4.00	5.00
" " . . .	\$1.25	1.40	2.00	2.25	2.50	3.00	3.75	5.00

2712. Extra Seltzer Bottles.—Narrow mouth, extra size and weight.

Useful for placing at a height on a shelf with distilled water, etc., for connecting with rubber tubing to glass dish.

1 gallon, each	\$0 50
2 gallons, "	1 25
5 " "	1 80

2714. Reagent Bottles, $\frac{1}{4}$ pint, with raised names of reagents blown into the bottle, and ground-glass stoppers.

Per dozen	1 75
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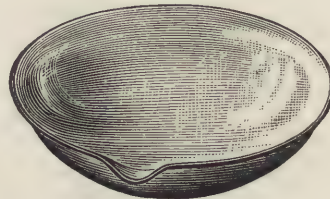
2716. Special Antitoxin Bottles.—Blue, amber or transparent glass, as used by Philadelphia and Princeton Boards of Health.

Heavy conical bottom, per gross	5 50
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Evaporating Dishes and Mortars



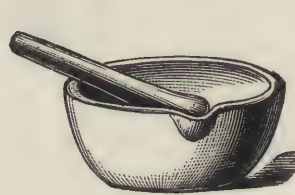
No. 2724



No. 2718



No. 2726



No. 2722



No. 2720

2718. Evaporating Dishes.—Royal Berlin Porcelain, Nos. 000 to 5, round bottom ; larger size, flat bottom ; the best dish made. Glazed, with lip.

No.	000	00	0	1	2	3	4	5	6	7
Diameter, in. . .	1	2½	3	3½	3½	3¾	4½	4¾	6	7
Capacity	½	1½	2	3	4	6	8	10	14	24
Each	\$0.10	.15	.20	.30	.35	.40	.45	.55	.75	.90
No.	8	9	10	11	12					
Diameter, inches . .	8¾	10½	12½	14	16½					
Capacity	3 pints	½ gallon	7 pints	1½	2 gallons.					
Each	\$1.20	1.75	2.75	3.65	6.00					

2720. Mortars, Glass.—

Capacity, ounces . .	1	2	4	8	16	32
	\$0.35	.40	.45	.60	.85	1.35

2722. Porcelain.—Glazed outside, rough inside, shallow form, solid pestles.

No.	00	0	1	2	3	4	5	6	7	8
Diameter, in. . . .	2	2½	3½	3¾	4½	4¾	5½	6½	7	7¾
	\$0.25	.35	.40	.50	.60	.70	.90	1.00	1.10	1.25

2724. Best Wedgewood.—Acid proof.

No.	0000	000	00	0	1	2	3	4	5	6	7	8
Diameter	3	3½	3½	4	4½	5	6	6½	7	8	8½	9½
	\$0.35	.45	.50	.55	.60	.75	1.00	1.25	1.50	1.75	2.00	3.00

2726. Berlin Porcelain Crucible.—15 c.c. capacity. Used for mixture of toxin and antitoxin in experiments for testing the strength of diphtheria antitoxin. Can be sterilized in the flame. Price \$0 25

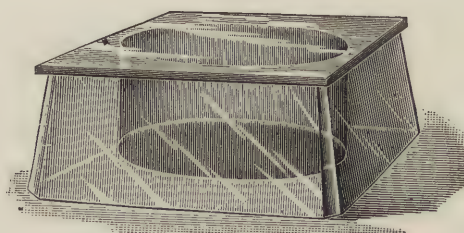
Entire contents are easily removed by "hypodermic" syringe.

PHILADELPHIA

Watch-Glasses, etc.



No. 2728



No. 2730-2

2728. Syracuse Watch-Glasses.

Per dozen, smooth bevel	\$0 75
Improved form with ground bevel for writing on, per dozen	1 25

2730. Embryological Watch-Glasses, surface smooth but not polished and ground.

Each	10
Per dozen	80

2732. Embryological Watch-Glasses, with cover and upper surface ground and polished.

Each	20
Per dozen	2 10



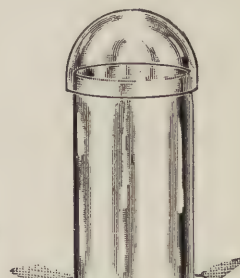
No. 2734 A



B



C



No. 2646

2734. Stender Dishes, clear white glass, straight walled, with top surface accurately ground and fitting into a groove in cover, making an air-tight fit.

	A	B	C	D
Height, mm.	80	55	46	30
Diameter, mm.	34	25	25	12
Price, each	\$0.22	.20	.18	.15

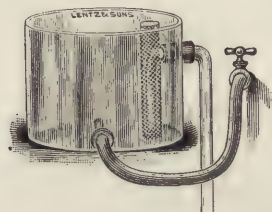
Glass Boxes, etc.



No. 2736



No. 2735



No. 2740

2735. Watch Glasses.—Best imported, well annealed, edges ground, half deep form, 2 inches in diameter, per dozen \$0.30

2736. Glass Boxes, with ground-in lid.

2 x 2, each	70
4 x 4, each	1 00

2738. Glass Boxes, of very heavy white clear glass, nicely finished—German—with ground cover fitting air-tight.

2 x 1½ inches, each	30
2¾ x 1⅞ inches, each	50

Specially adapted for holding cover-glasses in alcohol.

2740. Apparatus for Washing Specimens and Sections of Tissue.

—As used by Dr. A. O. J. Kelly at German Hospital, Philadelphia. Two holes of considerable size are drilled in a heavy jar, one near the top and the other near the bottom at side, *i. e.*, in a plane at right angles to the former. A glass tube connected to a rubber tube communicating with spigot, is inserted into a rubber stopper at the bottom of jar, and a syphon tube of **larger** diameter is inserted in the same manner in the upper hole. This syphon tube, which reaches nearly to the bottom of jar, acts as an outlet. The spigot is opened and the water flows in slowly till it reaches the bend of the Tantalus syphon when it is rapidly emptied by the action thus started. The short arm of the syphon tube is surrounded with a cylinder of fine wire gauze, reaching above the level of the high-water mark to prevent escape of minute sections. The rate of outflow can be regulated by means of a screw pinchcock. **The apparatus works continuously and automatically for any length of time, each . .**

2 50

Rubber Tubing, Stoppers, Corks, etc.

2742. Rubber Tubing, vulcanized, white, 12 feet length.

Size, inch bore	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{8}$	$\frac{1}{2}$
Per foot	\$0.05	.07	.10	.18	.20
In quantities, per pound	1.75				

2744. Rubber Tubing, black, pure gum.

Size, inch bore	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{8}$	$\frac{1}{2}$
Per foot	\$0.07	.11	.14	.20	.30
In quantities, per pound	3.50				

2746. Rubber Tubing, extra heavy, for filter pumps.

$\frac{1}{4}$ inch bore. Per foot18
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2748. Finest Rubber Tubing, cloth-wrapped, hand-made, the very best tubing for general laboratory use, will not stiffen or crack, excellent for incubator connections, etc.

Inch bore	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{1}{2}$
Per foot	\$0.06	.08	.12	.15	.18	.22

2750. Tubing, red rubber.

Inch	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$
Per foot	\$0.06	.10	.12

2752. Cork Stoppers, best quality, short.

Length	13	13	13	16	16	19	25	25
Diam. at Top	10	12	14	16	18	22	24	26
Price, per dozen	\$0.04	.06	.07	.08	.11	.15	.20	.25
Per gross . . . . .	.40	.52	.60	.72	1.08	1.36	1.96	2.40

2754. Cork Stoppers, best quality, long.

Length	15	18	20	20	22	22	24
Diameter	10	11	12	14	16	18	22
Dozen	\$0.05	.05	.06	.07	.08	.10	.18
Gross . . . . .	.50	.50	.55	.65	.75	.95	1.70

2756. Cork Stoppers, best quality, long.

Length	26	30	34	34	34	38	38	38
Diameter	24	26	28	30	32	42	47	50
Dozen	\$0.20	.25	.27	.30	.33	.55	.98	1.15
Gross	2.00	2.50	2.70	2.95	3.30	5.20	7.75	11.25

2758. Rubber Stoppers, solid or perforated, best soft rubber. Per pound **\$2 20**

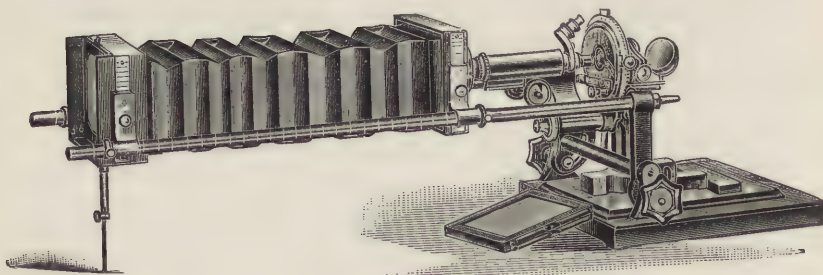
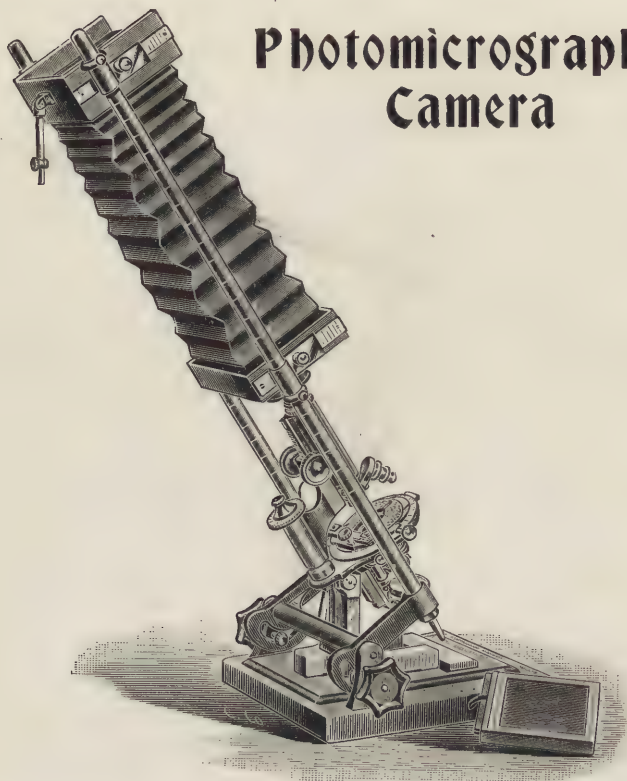
Diameter at Top	$1\frac{1}{2}$	$\frac{1}{4}$	$\frac{7}{8}$	$\frac{3}{4}$
Each	\$0.16	.10	.08	.05

2760. Glass Tubing, best German glass, soft. State inside diameter when ordering. Per pound **50**

2762. Glass Rod. State diameter when ordering. Per pound . . . **50**

CHAS. LENTZ & SONS

Photomicrographic Camera



- 2764. Adjustable Photomicrographic Camera, with double plate holder, for 4 x 5 plates and kits for 3 1/4 x 4 1/4 \$40 00**

This camera may be used with equal facility either vertically, inclined or horizontal, and is stable and serviceable in either position. The base is of **solid metal**, neatly japanned. The front and back of camera are both **adjustable** at right angles to the optical axis.

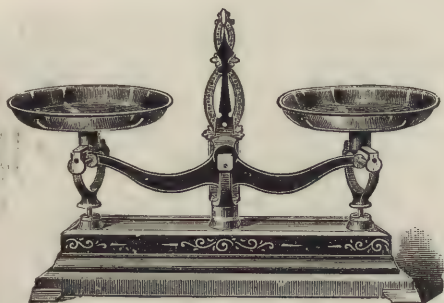
The whole apparatus is well made and finished with nickel-plated fittings.

Photomicrographic Cameras, with complete optical bench and accessories, can be supplied if desired.

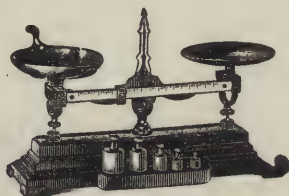
PHILADELPHIA

Scales, Balances and Weights

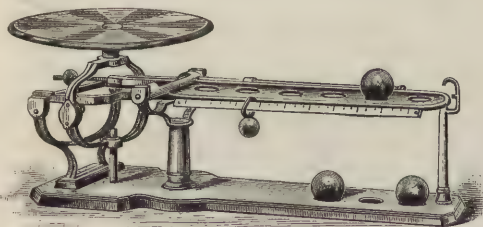
TROEMNER'S STANDARD



No. 2766



No. 2868



No. 2770



No. 2778

2766. Robervahl Scales, neatly ornamented in gold lines; heavy brass pans and brass indicator.

Size of Pan.	Capacity.	
9 inch.	15 pounds, price	\$7 50
8 inch.	10 pounds, price	6 00
5 inch.	5 pounds, price	5 00

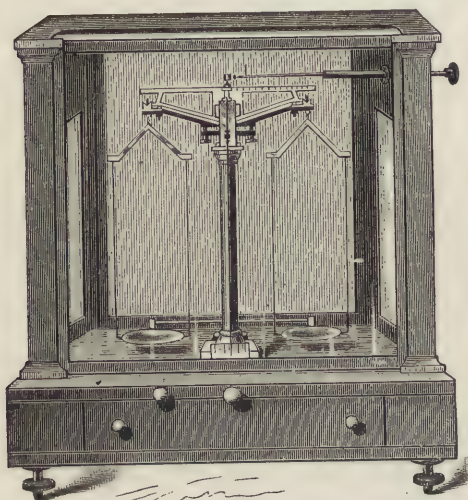
2768. Dispensing Scale, handsomely finished scale for rough prescription work; has $3\frac{3}{4}$ inch nickel-plated movable pans; a side-beam in front of scale with a sliding weight; this beam is divided into 120 divisions, each division representing one grain; an extra row of metric divisions is placed on bottom edge of beam, each representing 1 decigram. Platform or shelf is attached to base of scale, in which are fitted a set of solid brass weights, 2 ounces and down. Scale sensible to a $\frac{1}{2}$ grain.

Diam. of Pan, $3\frac{3}{4}$ inches. Capacity, 4 ounces, price 8 00

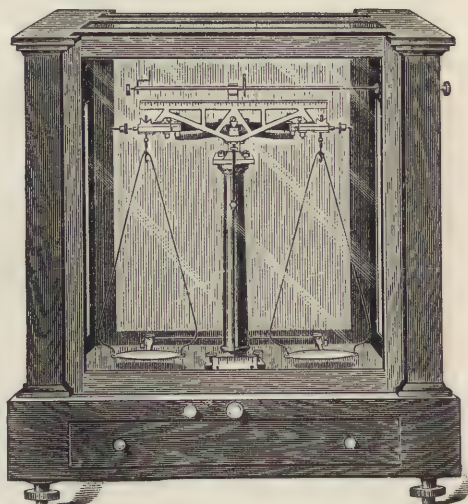
CHAS. LENTZ & SONS

Scales, Balances and Weights

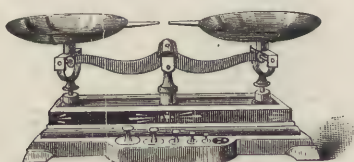
TROEMNER'S STANDARD



No. 2776



No. 2774



No. 2772



No. 2780

2770. Ball, Animal and Solution Scale, well adapted for weighing guinea-pigs. It will weigh liquids with an accuracy that cannot be approached by ordinary methods. The Scale is provided with an extra balancing beam by which an empty bottle or container is quickly balanced, by simply sliding the balance weight along until a correct balance is secured; the new ball system is used in place of the weights; this is a great improvement over the old method. The scale weighs from 10 gram to 16 kilos, with the utmost accuracy and perfection. Capacity, 16 kilo. Price **\$20 00**

2772. Laboratory Scale (new), for accurate weighing. Scale specially designed for Laboratory and Pharmaceutical work; has 6 inch nickel pans, which are movable. Scale will carry one pound in each pan; is sensible to a $\frac{1}{2}$ grain; has a full set of weights running from 8 ounces down to 1 grain; these are neatly fitted in a projecting shelf attached to the base of scale. Metric weights furnished when so desired. A useful scale for weighing component parts of culture media, etc.

Diam. of Pans, 6 inches. Capacity, 1 pound, price **9 00**

Balances and Weights

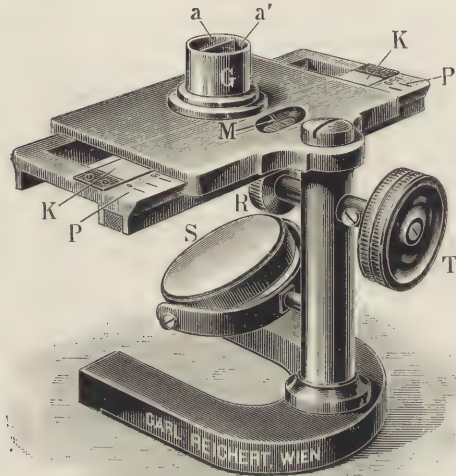
TROEMNER'S STANDARD

- 2774. Balance, the Standard of Excellence**, short arm pure aluminium beam, agate planes and "Agate" knives, no steel used; both arms of the beam are graduated; the pans also of aluminium; all the brass work is plated with gold; elegant mahogany case (old wood), with heavy plate glass bottom; case has glass top to admit light freely; is provided with improved self-locking pan arrest (push in the button, turn slightly to the left, this locks the arrest). Balance will carry 200 grammes, and is sensible to 1-20 milligramme. All the workmanship is of the very finest. The Balance is in use at U. S. Coast Survey, by all the large steel and iron works, and many bacteriological and chemical laboratories. Price \$125 00
- 2776. Analytical Balance**, short arm, both arms of beam are graduated into 1-10 milligramme; beam is of aluminium, all bearings of "Agate;" capacity 200 grammes, sensibility 1-10 milligramme; the bows and pans of nickel, bows are 4 inches wide; fine French polished mahogany case, etc., etc. Price 96 00
- 2778. Analytical Balance**, specially adapted for students' use, also for manufacturing establishments, etc. Balance has open beam, graduated to $\frac{1}{2}$ milligrammes; all bearings are "Agate," wide bows, with 3 in. pans; will carry 100 grammes in each pan, sensible to $\frac{1}{4}$ milligramme; improved rider attachment; fine French polished mahogany glass case. Price 50 00
- 2780. Weights.**—In velvet-lined mahogany case—large weights of solid brass and lacquered—small ones of aluminium, all of the finest finish, and adjusted to the utmost accuracy.
- | | |
|---|-------|
| 20 Gram piece and down to 1 Centigram | 3 50 |
| 50 " " " " " " | 5 00 |
| 100. " " " " " " | 6 00 |
| 500 " " " " " " | 10 00 |
| 1000 " (one kilo) " " " " | 12 00 |

Scales, balances and weights of other manufacturers can be supplied if desired.

CHAS. LENTZ & SONS

Blood-Testing Instruments



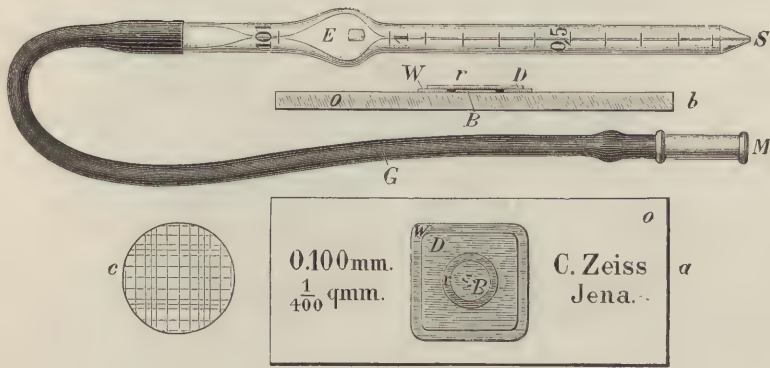
No. 2782



No. 2788

- 2782. Haemometer, Von Fleischl's.** Manufactured by Carl Reichert Wien. A standard instrument for obtaining the percentage of hæmaglobin in the blood by dilution of a fixed quantity with a measured amount of distilled water and comparing the resulting color with successive parts of a glass wedge of permanent and increasing depth of color. Price, complete in case **\$25 00**
 Extra capillary tubes, each **30**
 Directions for use accompany the instrument.
- 2784. Haemaglobinometer, Gower's.** In this instrument a measured amount of blood is taken and diluted with distilled water in a graduated tube until it is of the same color as a tinted tube provided, when the percentage is read off on the scale. Accurate to within **about 5** to 10 per cent. In case **2 25**
- 2786. Blood Lancet, Aseptic.** Our own introduction. The lance is guarded from patient's view and any depth of incision can be obtained and maintained by the locknut; nickel-plated. Can be safely and conveniently carried in the vest pocket **1 00**
- 2788. Blood Lancet, Aseptic.** Dr. Judson Daland's improvement. Broad arrow lance at one end and trocar point at other end. With locknuts, aseptic, nickel-plated **1 50**

Blood-Testing Instruments



No. 2790

Haemacytometer, Thoma-Zeiss. For counting the number and ascertaining the percentage of red or white corpuscles in human blood. A standard instrument, made by Zeiss-Yena. A measured quantity of blood in a capillary pipette is diluted with a normal solution in known proportions; a drop of this mixture is deposited upon a small sunken glass platform, and a cover placed thereon. This platform is ruled into minute squares, and the number of corpuscles in a number of squares are counted with the medium power objective lens of a microscope.

- | | | |
|--------------|--|----------------|
| 2790. | Haemacytometer, with pipette for counting red corpuscles, only | \$10 40 |
| 2792. | " " " pipettes " " red and white corpuscles, | 14 40 |
| 2794. | Extra pipettes for red corpuscles, 1:100 | 3 60 |
| 2796. | " " " white " 1:10 | 3 60 |
| 2798. | Counting plate, in case | 6 00 |

2799. Dr. R. Friedlander's Counting-Chamber for Leucocytes.

This chamber consists of 16 x 16 squares of 0.3 x 0.3 sq. mm. each. The depth of the chamber is 0.222 mm. (see Deutsche medicin. Wochenschrift No. 31, July, 1897)

8 00

- 2800. Gabritschewsky's Capillary Pipette**, specially adapted for use in conjunction with No. 2798 for counting bacteria. With divisions at 0.0025, 0.005 to 0.05 c.c. on the capillary tube. Total capacity 0.55 c.c. With rubber cap and pinch-screw clip

6 00

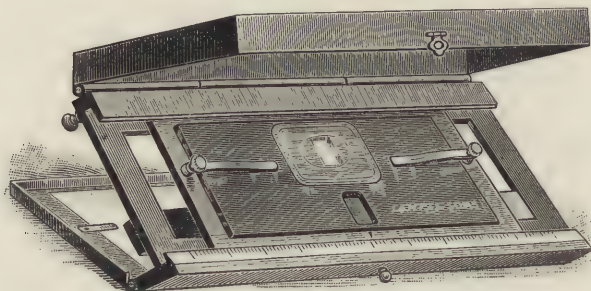
The Cover-Glasses for the counting-chambers, as now supplied are of two kinds, viz.: the ordinary form of plane polished covers of thicknesses of 0.4 and 0.6 mm. respectively and a newer form consisting of a plane cover-glass of ordinary thickness (about 0.18 mm.) having one side cemented to a stout conical glass cell.

- | | | |
|--------------|--|-----------|
| 2801. | Price of cover-glass of 0.4 or 0.6 mm. thickness | 30 |
| 2802. | Price of a cover-glass of 0.18 mm. thickness | 80 |

CHAS. LENTZ & SONS

Blood-Testing Instruments

TAYLOR'S HAEMAGLOBINOMETER



No. 2804

2804. This apparatus was suggested to us by Dr. A. E. Taylor, of the Wm. Pepper Clinical Laboratory of the University of Pennsylvania Hospital. It consists of a fine capillary tube and mixing bulb with bead, similar to that supplied with the Zeiss Hæmacytometer, a glass wedge of gradually increasing depth of color (the same as is used with the Fleischl Hæmometer), and a rectangular glass plate with a square raised platform in the center. This raised platform, which is cemented to the plate nearer to one side, has in its center a circular cavity or cell of exactly one millimeter in depth. The rectangular plate is accurately fitted in a metal frame sliding in grooves, so that the cavity with its contents, can be brought successively to any part of the wedge for color comparison.

To use the apparatus a drop of blood is carefully drawn into the mixing tube up to the engraved mark, and distilled water is then drawn up till the bulb is entirely filled to the second engraved mark on the upper constricted end; the diluted blood is then mixed (by means of the contained bead) by shaking the bulb. The portion remaining in the capillary tube is then blown out and discarded. A part of the diluted blood is then blown out into the cavity in the platform of rectangular plate until it is filled. A ground and polished square cover-glass (supplied) is placed on top and the contents of cell are compared with successive parts of the wedge by reflected light from the white background until the color, as seen through both narrow rectangular diaphragms, agrees in depth, when the percentage of hæmaglobin is indicated on the scale.

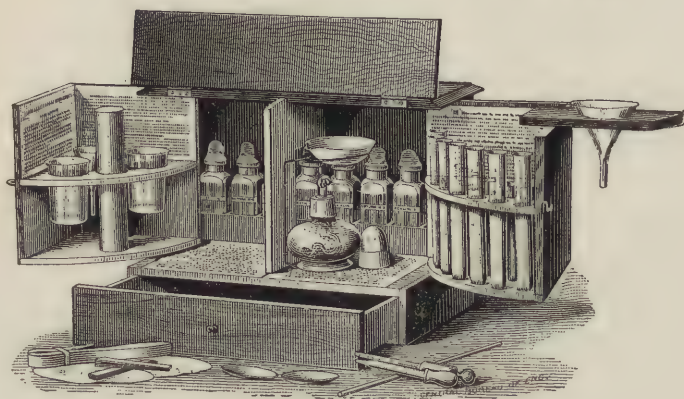
This Hæmaglobinometer presents direct improvements over the Fleischl instrument. The blood examined is of **a known accurate** dilution made with a pipette, which is very much greater in length than that employed in the Fleischl instrument, so there is less risk of inaccuracy. The quantity of the diluted blood to be compared with the Reichert wedge is **constantly and accurately fixed** by the use of a cell of one millimeter depth, somewhat similar to the cell employed in the Thoma Hæmacytometer. Another advantage of this instrument over the Fleischl is its portability; it can be closed and easily carried in the pocket, being about the same size as the case of the smaller Thoma Hæmacytometer.

The capillary pipette supplied allows of a dilution of 1-10 or 1-20.

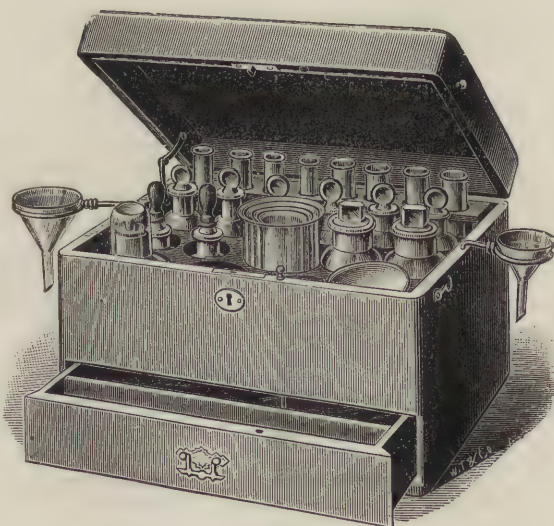
Price \$30 00

PHILADELPHIA

Urine-Testing Apparatus



No. 2806



No. 2808

2806. Urinalysis Set.—In folding oak, dust-proof case, with drawer, complete with test-tube rack, receptacles for bottles, funnels and beakers, wire evaporating dish holder, test-tube holder, including 8 1-ounce ground stopper bottles with reagents, urinometer and jar, alcohol lamp, evaporating dish, 1 dozen assorted test-tubes, 2 beakers, one funnel, watch glass, graduated pipette, stirring rod, filter paper and red and blue litmus paper. Price **\$6 00**

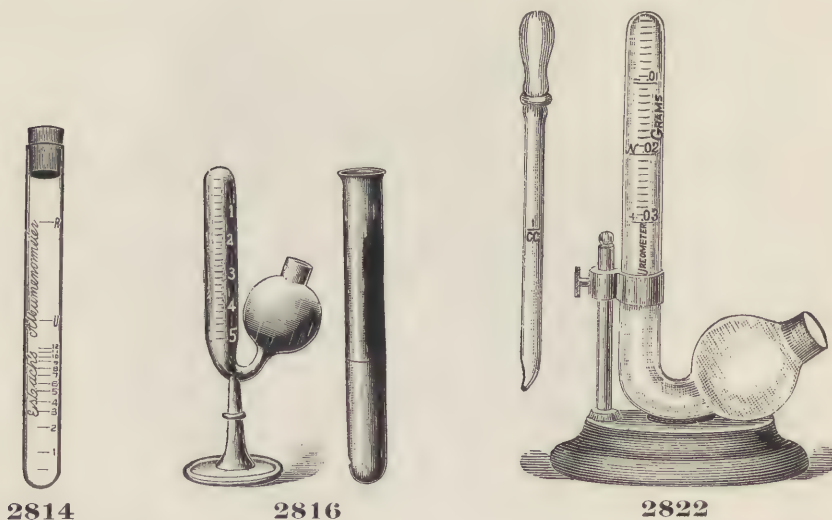
2808. Urinalysis Test Set.—In polished mahogany case, with drawer. Size of case, $10\frac{3}{4}$ x $7\frac{1}{2}$ x $6\frac{3}{4}$ inches.

CHAS. LENTZ & SONS

- | | |
|--|---|
| 6 Reagent Bottles, Glass Stoppered. | 6 Small Glass Evaporating Dishes. |
| 2 Reagent Bottles, with Pipette Stoppers. | 2 Glass Funnels, |
| 2 Salt Mouth Reagent Bottles, Glass Stoppered. | 1 Glass Stirring Rod. |
| 4 Beaker Glasses, Nested. | 2 Wire Holders for Funnels, etc. |
| 12 Test-Tubes, Assorted Sizes. | 1 Pack White Filter Paper, 100 Sheets. |
| 1 Test-Tube Rack. | 1 Screw Capped Vial, containing Litmus Paper, Neutral Tint. |
| 1 Test-Tube Holder. | 1 Pair Pincers for holding Litmus Paper. |
| 1 Test-Tube Brush. | 1 Sheet Gummed Labels. |
| 1 Urinometer with Jar, in Case. | $\frac{1}{2}$ Gross Slides, |
| 1 30-Minim Graduated Pipette. | $\frac{1}{2}$ Ounce Cover-Glasses. |
| 1 Glass Spirit Lamp. | 100 Slide Labels, Gummed. |
| 1 Porcelain Evaporating Dish. | 1 Pair Forceps. |

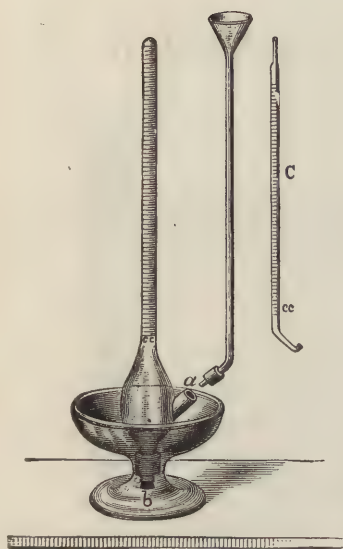
Price, complete, without reagents, each \$10 00

- 2810.** Bartley's Complete Test Case, for the pocket 2 50
- 2812.** Parke, Davis's Complete Test Case for the pocket 2 50

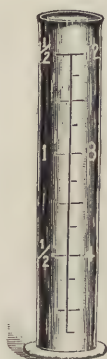


- 2814.** Albuminometer.—Esbach's \$0 75
- 2816.** Saccharometer.—(Dr. Einhorn's) fermentation ; consisting of two graduated fermentation tubes and graduated test-tube, in case, complete 1 50
- 2818.** Ureometer.—(Doremus's) with pipette, without stand 1 25
- 2820.** " " " glass foot 1 50
- 2822.** " " " turned wood support and brass clip 2 00
- 2824.** Ureometer.—(Doremus') with graduated burette and stopcock, all glass, without support 4 00

PHILADELPHIA



No. 2828



No. 2830



No. 2834

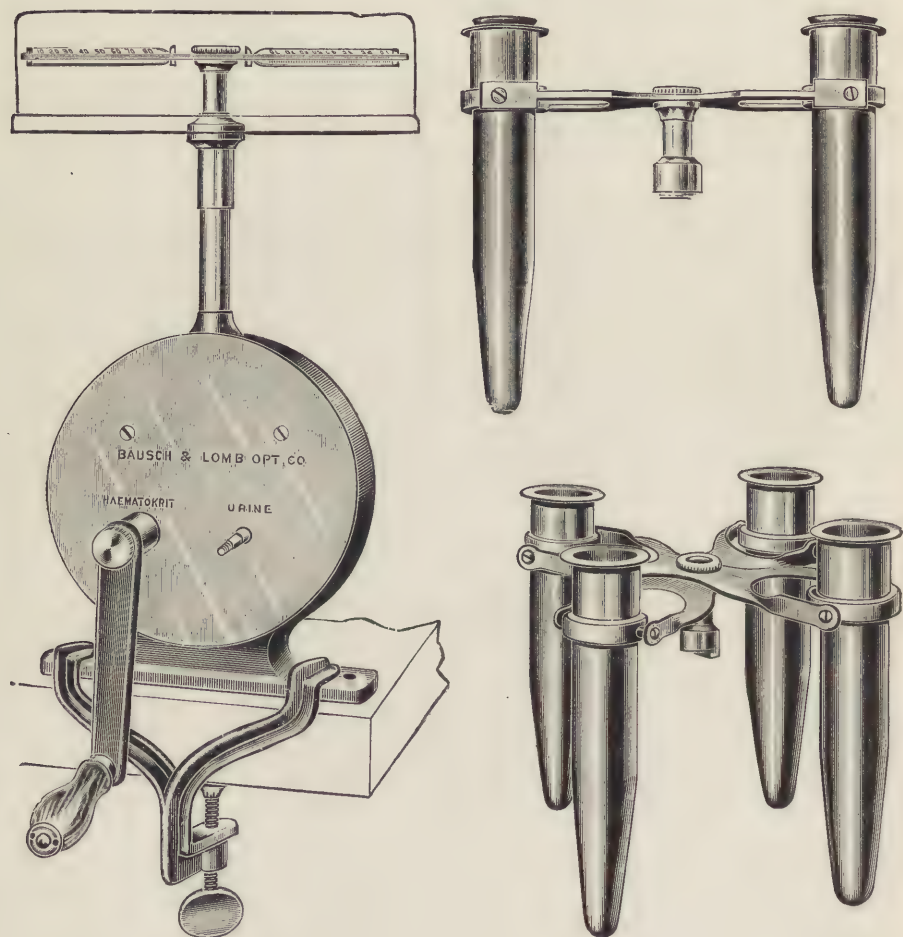


No. 2840



2826.	Ureometer.—(Lyon's)	\$1 25
2828.	" (Marshall's)	3 00
2830.	Urinometer.—(Lentz's), with porcelain scale inside of glass tube; graduations cannot be effaced; complete with jar; an excellent urinometer	75
2832.	Urinometer.—Paper Scale with jar	50
2831.	" (Dr. Squibb's), with thermometer	2 50
2836.	" Jar (only), with heavy foot ungraduated	25
2838.	" " " without foot graduated	25
2840.	Urine Test Glass.—Conical, 2 ounces	25
2842.	" " " " 4 ounces	30
2844.	" " " Cylindrical, heavy glass, conical inside at bottom only, as used at German and Philadelphia Hospitals. Per dozen	12 00
2846.	Ground Glass Covers.—For above, round	10
2848.	Test-Tubes.—Assorted sizes. Per dozen	30
2850.	Plain Pipettes.—For urinary sediments, short	10
2852.	" " " " long	12
	Slides and Covers for microscopical examination of deposits, etc. See Index	
2854.	Lactodensimeter.—(Lactometer), small, for obtaining percentage of fat in human milk, with plain cylinder	2 00
2856.	Lactodensimeter.—(Lactometer), large, for obtaining percentage of fat in cows' milk, in case with graduated cylinder and thermometer	1 50
2858.	Lactoscope, Feser's	3 25

Hand Centrifuge and Haematokrit



No. 2860

This centrifuge is so constructed that a speed of from 1,000 to 3,000 revolutions per minute can be easily maintained with the urine or milk sedimentation apparatus and by simply removing the crank from the low-speed axis and transferring it to the high-speed axis, a speed of 10,000 revolutions and upwards can be attained without undue exertion with the Daland's Hematokrit attachment (or sputum precipitating tubes) in position.

The gearing is excellently made and runs very smoothly and evenly with comparatively little noise and vibration.

2860. Double Speed Centrifuge, complete, with one plain and one graduated glass urine tube, two aluminum shields and sup-

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port, Daland's Hematokrit frame and two graduated blood tubes and sputum precipitating tubes \$20 00

2862. Double Speed Centrifuge, with attachable arm for four tubes **25 00**

2864. Metal Frame or case for enclosing rotating part of hematokrit, as per illustration, extra **2 00**

2866. Bausch & Lomb Optical Co.'s urine centrifuge, single geared, for urine sedimentation, complete, with plain and graduated sedimentation tube **10 00**

Special booklet on application.



SPIRAL GEAR USED IN **2860**
AND **2866** CENTRIFUGES



No. **2868**



No. **2870**



No. **2872**



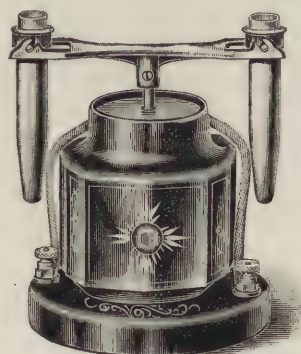
No. **2874**

2868. Ungraduated Urine sedimentation tube, each **\$0 20**

2870. Graduated Urine sedimentation tube, each **50**

2872. Graduated milk tube, for obtaining percentage of fat, each **50**

2874. Pipettes, for acid, etc., per set of two **50**



No. **2876**

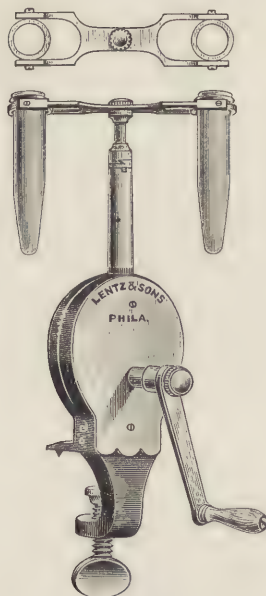
2876. Edison Electrical Centrifuge outfit to run on 110 or 120 volt direct current, consisting of

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- 1 Electrical Centrifuge, with urine attachment, 1 graduated tube and 2 plain tubes.
- 1 speed regulating Rheostat.
- 1 Hæmatocrite, with 2 graduated tubes and 2 plain (Sputum) tubes.
- 1 Snap Switch.
- 1 attachment plug and cord.
- Price, complete \$35 00

For investigation of urine, blood and bacteria. Made in the Edison Factory, Orange, N. J. Constructed especially for durability, economy of current and high speed. Special circular on application.

Lentz's Urine Centrifuge



No. 2878

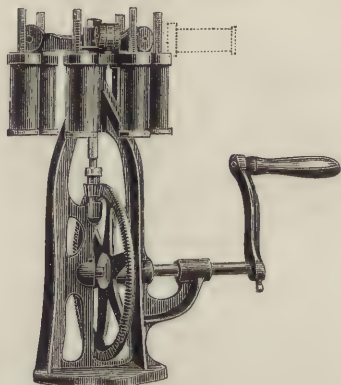
- 2878. Lentz's Urine Centrifuge**, for immediate precipitation of urinary deposits, etc., complete, with two plain urine tubes, one graduated urine tube and pipette **\$10 00**

Provided with **steel gears** intermeshing with gears of hard composition metal.

The number of revolutions to every turn of the crank being known, the actual number of revolutions per minute is easily ascertained and kept constant.

Every one has given perfect satisfaction wherever placed.

Centrifugal Machines for Milk Analysis



2880

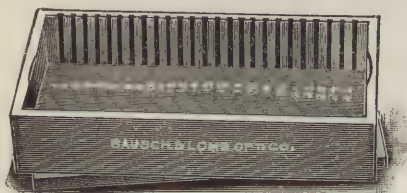
2880. Leffman & Beam Centrifugal Machine.

Complete outfit with tubes, etc., for milk analysis, for 2 bottles . . .	\$16 00
“ “ “ “ “ 6 “ . . .	24 00
“ “ “ “ “ 12 “ . . .	32 00

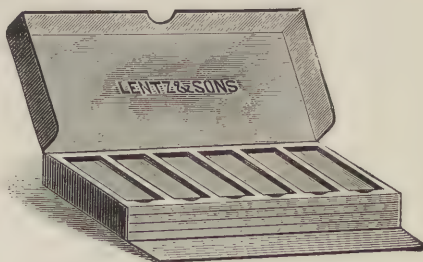
2882. Babcock Centrifugal Machine.

Complete outfit with tubes, etc., for milk analysis, for 4 “ . . .	9 00
“ “ “ “ “ 8 “ . . .	12 00

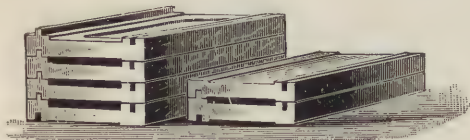
Slide Boxes and Cabinets



No. 2884



No. 2886



No. 2894

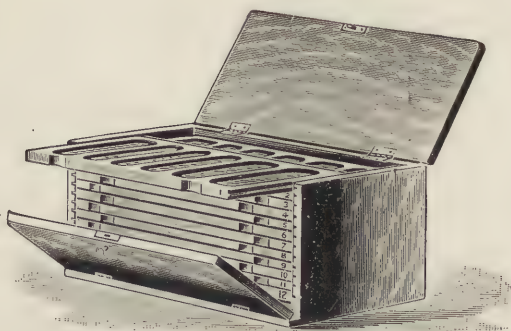


No. 2894 (Section).

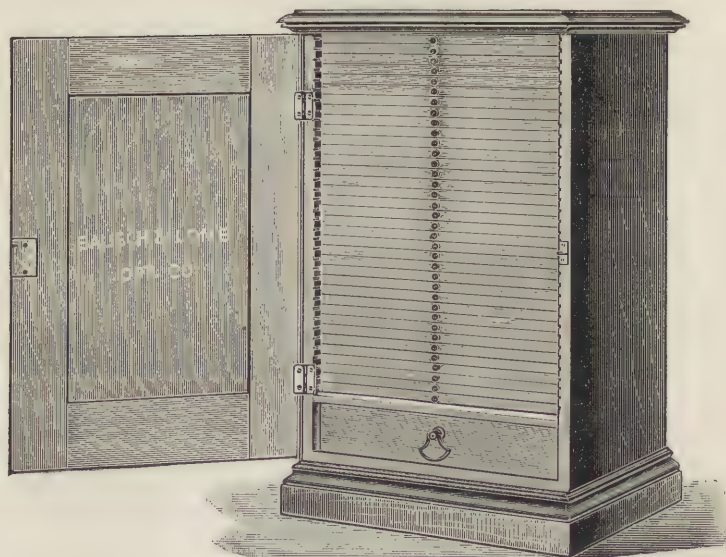
2884. Slide Boxes, wood, to hold 25 objects, 3 x 1 inches, each . . . \$0 10

2886. Cloth-Covered Box, containing 4 trays, each holding 6 slides, each . . . 30

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No. 2888



No. 2892

- | | | |
|-------|--|--------|
| 2888. | Slide Cabinet, wood, 12 trays, holding 72 objects, 3 x 1 inches, each | \$2 75 |
| 2890. | Slide Cabinet, wood, 12 double trays, holding 144 objects, 3 x 1 inches, each | 4 00 |
| 2892. | Slide Cabinet, cherry wood, highly polished and finished, with nicked handle, lock and drawer, 36 trays, each holding 12 slides. Drawer provided with index system | 10 00 |
| 2894. | New Reversible Mailing Cases, for mounted micro objects on slide, 3 x 1 inches. Each piece has a depression to prevent crushing of cover, per dozen | 06 |
| 2896. | Turn-table, for ringing slides and sealing covers | 2 50 |
| 2898. | " with hand-rests | 3 00 |
| 2900. | " " " " centering | 4 00 |
| 2902. | " " " " self-centering | 6 00 |

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Filter Paper

2904. Filter Paper, domestic manufacture, an excellent paper, very strong and of uniform texture, filters clearly and rapidly.

ROUND, 100 SHEETS IN PACK.

WHITE.

4 inches diameter	\$0 12
5 " "	15
6 " "	20
8 " "	33
10 " "	46
13 " "	70
15 " "	86
18 " "	1 20
20 " "	1 50
24 " "	2 00

GRAY.

4 inches diameter	\$0 11
5 " "	14
6 " "	18
8 " "	28
10 " "	40
13 " "	60
15 " "	76
18 " "	1 10
20 " "	1 40
24 " "	1 80

IN SHEETS 19 x 19 INCHES.

WHITE.

Per quire	\$0 40
" ream	6 80

GRAY.

Per quire	\$0 38
" ream	6 15

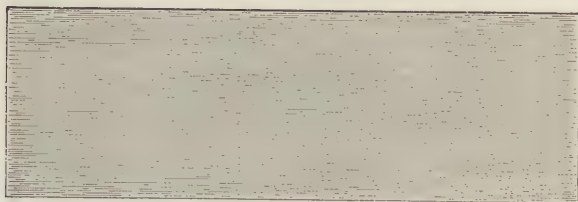
2906. Filter Paper, Munktel's best quality Swedish No. 1, giving least ashes of any paper made, 17 x 21 inches, quire **1 50**

2908. Filter Paper, Munktel's No. 2, for rapid and general analysis, 17 x 21 inches, quire **1 25**

2910. Filter Paper, Schleicher & Schuell's No. 597, 24 x 24, quire . . **1 10**
An excellent heavy paper for bacteriological work, rapid and clear filtration of agar, antitoxin, etc. There is none better for the purpose, per ream **20 00**

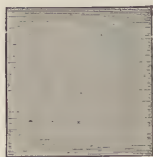
2912. Filter Paper, Pras Dumas, for agar filtration, diameter 13 inches, gray, per 100 sheets **50**

Slides and Cover Glasses



		Per Dozen.	Per Gross, in 1/2 Gross Boxes.
2914.	Glass Slides, 3 x 1 inches, ground edges green	\$0 10	\$0 75
2916.	" " " white	12	85
2918.	" " " " extra thin	14	1 00
2920.	" 3 x 1, with concave center	60	
2922.	" " extra thick, with deep concavity for hanging drop cultures	1 40	
2924.	Special 3 x 1 second quality ground-edge slides suitable for all general laboratory work and urinalysis. When in stock		60
For fine work, we recommend the extra thin white slide, No. 2918.			
2926.	Holman's new style life slide, with two air-chambers and diagonal channels. Bacteria, infusoria, etc., can be kept alive on the slide for several days. A beautiful contrivance for watching motile bacteria and animal organisms in water or Pasteur's solution. In wood box, each		1 50
2928.	Holman's syphon slide, with cover and tubes		4 00

THIN GLASS COVERS



			Per Dozen.	Per Ounce, in ½ Ounce Boxes.	
2930.	Squares, No. 0, selected, extra thin	}	\$0 20	\$2 00	
2932.	" No. 1, $\frac{1}{150}$ to $\frac{1}{200}$ in. thick		$\frac{1}{2}, \frac{5}{8}, \frac{3}{4}$. . .	16	1 05
2934.	" No. 2, $\frac{1}{100}$ to $\frac{1}{150}$ "		$\frac{3}{8}$ or 1 in. . . .	14	80
2936.	" No. 3, $\frac{1}{50}$ to $\frac{1}{100}$ "		. . . . .	12	60
2938.	Circles, No. 0, selected, extra thin	}	25	2 50	
2940.	" No. 1, $\frac{1}{150}$ to $\frac{1}{200}$ in. thick		$\frac{1}{2}, \frac{5}{8}, \frac{3}{4}$. . .	18	1 25
2942.	" No. 2, $\frac{1}{100}$ to $\frac{1}{150}$ "		$\frac{3}{8}$ or 1 in. . . .	16	1 00
2944.	" No. 3, $\frac{1}{50}$ to $\frac{1}{100}$ "		. . . . .	14	80
2946.	Rectangles, No. 1, $\frac{1}{150}$ to $\frac{1}{200}$ in. thick	}	cut to any size		1 30
2948.	" No. 2, $\frac{1}{100}$ to $\frac{1}{150}$ "		. . . . .		1 05
2950.	" No. 3, $\frac{1}{50}$ to $\frac{1}{100}$ "		. . . . .		85

No. 2 cover-glass should be used with all lenses listed, including oil immersion 1/2

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Staining Solutions

	SOLUTION		
	30 c.c.	100 c.c.	500 c.c.
Ammonia carmine (Beale's)	\$0 25	\$0 75	\$3 00
Anilin black (Nigrosin)	20	35	75
“ blue	25	50	1 00
“ blue black	20	35	75
“ green	20	35	75
“ red	20	35	75
“ violet	25	40	90
Benzo purpurin	20	40	75
Bismark brown	20	40	75
Borax carmine (Grenacher's)	35	1 00	4 00
Carmine, Lithium (Orth's)	40	1 80	5 00
Carbol-Fuchsin (Ziehl's), for tubercle bacilli, etc.	25	75	3 00
Chrysoidin	20	40	75
Congo red	20	40	75
Coralin	20	35	70
Dahlia violet	20	40	80
Eosin, yellowish	25	50	1 00
“ bluish	25	50	1 00
Ehrlich-Biondi-Heidenhain triple mixture, for blood	40		
Ehrlich's neutrophile stain, for blood, 60 c.c. bottle, 60 cents	40		
Fuchsin	20	40	75
“ acid	25	45	90
Gentian violet, a good general stain for bacteria	25	50	1 00
Gold Orange	20	35	70
Hæmatoxylin (Delafield's)	25	75	3 00
Iodine green	25	50	1 00
Indulin	20	35	70
Loeffler's alkaline blue, for diphtheria bacilli, etc.	25	75	3 00
Magenta	20	40	75
Malachite green	20	35	70
Methyl blue	30	65	1 50
“ green	30	65	1 50
“ violet	25	50	1 00
Methylen blue	25	50	1 00
Orange G	20	35	70
Picro carmine (Weigerts')	50	1 50	
Rubin S	40	90	2 25
Saffranin	25	50	1 25
Solid green	20	35	75
Vesuvium	20	40	75

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Grübler's Dry Stains

The only dry stains universally recognized as standard.

A **large stock** always on hand. In original vials with screw stopper. Imported by us direct from Leipzig, Germany.

	30 Gms.
Alum Carmin	\$2 25
Alizarin	1 25
Alkanin	1 50
Anilin blue sol. in alcohol	1 05
" " " " water	85
Anilin blue-black	1 05
Anilin green	85
Biondi-Heidenhain's Triple Blood Stain	4 50
Bismark brown	60
Brazilin	4 50
Blue de Lyons	1 00
Bluish Eosin	1 25
Carmin rub-opt	85
Carminsaures Ammoniak	4 20
" Natron	4 05
Chrysoidin	80
Congo red	1 00
Corallin (sol. in water)	70
Cyanin	15 75
Dahlia	70
Echtgelb	1 40
Eosin sol. in water	80
" " " alcohol	85
Fuchsin for Bacteriology	75
" Acid (saure) Weigert	80
Gentian violet	70
Ham Alaun (Nach Mayer)	1 80
Hæmatoxylin, pure crystals	2 70
" " " opt. crystals	2 25
Hæmatin (Mayer)	9 00
Indulin	1 00
Indigo Carmin, for injection (Heidenhain)	9 60
Jodgrun (Iodine green) (Griesbach)	1 50
Magdala red (Echt)	12 75
Magenta red	90
Malachit green	90
Methyl blue	1 05
" green	1 05
" green cryst. oo. (Celblich)	1 25
" violet, 5b.	90
Methylin blue for staining Bacteria, after Koch	1 00
" " B. X. (Mayer)	1 50
Nigrosin	70
Neutral red	2 00
Orange G.	70
Orcein, pure (Israel, Unna)	6 75
Picro Carmin after Cuccatti	6 90

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	30 Gms.
Picro Carmin after Hoyer	\$6 75
" " " Ranvier	7 50
Phloroglucin	8 00
Rosanilin violet (Haunstein)	1 20
Safranin O sol. in water (Pfitzner Flemming)	1 00
" " " alcohol	1 15
Sudan III	2 00
Sulph. Indigotate of Soda	1 40
Thionin, pure (Ehrlich Hoyer Heidenhain)	5 00
Thionin from Cojet et Cie., Paris	6 00
Toluidin blue	1 70
Anilin, pure (sol.)	30
Kernschwartz (sol.)	30

These are sold in original vials only, with screw stoppers, *i. e.*, in the majority of cases 1 oz. vials, but in the more expensive stains, $\frac{1}{4}$ oz. and one drachm vials.

When stains are supplied in less than 1 oz. bottles, 10 cents additional is charged for the screw-stoppered bottle.

Media for Mounting Microscopic Objects and for Finishing Mounts

	30 c.c.	100 c.c.
Asphaltum	\$0 25	\$0 60
" quick-drying	35	
Balsam, Canada, natural, paper filtered		
" " " " " in 20 c.c., collapsible tubes, each	\$0 20	
Balsam, Canada, dissolved in benzole	40	1 00
" " " " chloroform	40	1 15
" " in xylol, quick-drying	40	1 15
" " " " " in 20 c.c. tubes	30	
" Damar in benzole	40	90
Bell's microscopical cement	50	
Brown's transparent rubber cement	35	
Brunswick black	25	60
Deane's medium	35	
Farrant's "	50	
Gold size	25	60
Glycerine, camphorated	25	
" jelly	50	
Hollis' glue	30	
King's amber cement, 15 c.c. bottle	25	
" white " 15 c.c. "	25	
" lacquer cell and finish, blue	50	
" " " " " scarlet	50	
Marine glue, colorless	40	
" " fluid	30	80
" " hard, melting-point, 120° C., 30 grammes	25	
White zinc cement	40	
Labels for slides, gummed, per 100	10	

Imbedding and Injecting Substances

	30 Gms.	60 Gms.	100 Gms.	500 Gms.
Carmine injecting gelatine (Dr. Seiler's), dry . . .	\$1 40			
Celloidin (Shering's), in shreds, per ounce . . .	1 00			
“ “ granulated “ “ . . .	1 05			
Paraffin, melting-point, 43° C., in tin boxes . . .				\$0 35
“ “ 54° C., “ . . .				40
“ “ 43° C., wrapped in cakes . . .				20
“ “ 54° C., “ . . .				25
“ “ 71° C., “ . . .				30
Pith for sectioning, per package . . .	\$0 10			
Prussian blue . . .	20	\$0 35	\$0 50	
Vermilion, best English . . .	30	50	60	

Nutrient Substances, Cotton, etc., for Bacteriological Work

Agar-agar, best quality, in shreds, per pound . . .	\$1 00
Beef extract (Liebig's), in quarter-pound cans, 1 can . . .	1 00
Gelatin, best German, gold label, per pound . . .	90
Peptonum Siccum (Witte's), in 125 grammes bottles, 1 bottle . . .	1 00
“ “ “ “ 500 “ “ . . .	4 00
Cotton wool for plugging test-tubes, non-absorbent, per pound package . . .	40
Grape sugar, per pound . . .	2 00
Glucose, crystallized, pure, 500 grammes . . .	20
Litmus paper, Squibb's, in vials, per dozen vials . . .	1 00
“ “ per book . . .	05
“ “ dozen sheets . . .	50
“ pencils (Tyrees), each . . .	25

Chemicals, etc., for Microscopic Work

Chemicals only, containers extra.

	30 c.c.	100 c.c.	500 c.c.
Benzole, c.p.	\$0 10	\$0 20	\$0 40
Chloroform, pure			2 50
Creasote, beechwood, pure	25	50	1 50
Ether, Dr. Squibb's			2 25
“ Sulphuric, pure	40	60	
Xylol, c.p.	20	60	1 75
Alcohol, absolute, Dr. Squibb's			1 60
“ “	20	40	1 00
“ 95 per cent.			60
“ methylic, 90 per cent.			30
Formaldehyde, 40 per cent. solution			40
“ “ “ “ “ + 10 per cent. glycerin			40

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	30 c.c.	100 c.c.	500 c.c.
Formalin, Schering			\$1 25
Glycerin	\$0 15	\$0 30	75
Oil, anilin	15	30	75
" cedar wood, Schimmel, for clearing	15	40	1 50
" " " for immersion objectives	40	1 00	
" cloves	15	40	1 25
" turpentine, redistilled	15	25	60

Text - Books

IN BACTERIOLOGY, ETC.

	Net Price.
Abbott, A. C. The Principles of Bacteriology, latest edition, cloth, illustrated . .	\$2 75
Ball, M. V. Essentials of Bacteriology	1 00
Cooke, M. C. Microscopic Fungi, an introduction to the study of Rust, Smut, Mildew, Mould, etc.	2 25
Crookshank, Edw. M. A Manual of Bacteriology	6 00
" " " Photography of Bacteria. Illustrated by 86 photographs . .	4 25
Coplin. Pathology and Bacteriology	3 00
De Baray, A. Lectures on Bacteria, pp. 193, illustrated	1 60
Egbert, Seneca. Hygiene and Sanitation	2 25
Fraenkel, P. Text-Book of Bacteriology, translated by J. H. Linsley	3 75
Von Freuderich, Dr. Ed. Dairy Bacteriology, cloth	1 00
Huppe, Ferdinand. Methods of Bacteriological Investigation, cloth	2 50
Hansen, Emil, Chr. Practical Studies in Fermentation, cloth, illustrated	5 00
Kanthach, A. A. A Course of Elementary Practical Bacteriology, pp. 181	1 10
Klein, E. Micro-Organisms and Disease. An introduction into the study of specific micro-organisms	1 25
McFarland. A Text-Book of the Pathogenic Bacteria, pp. 359	2 50
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Prudden, T. M. Story of the Bacteria	75
" " " Dust and its Dangers	75
Salomonsen, C. J. Bacteriological Technology for Physicians	1 25
Sternberg, Geo. M. A Manual of Bacteriology, cloth, pp. 898	8 60
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Schenk, S. L. Manual of Bacteriology	3 00

IN HISTOLOGY AND PATHOLOGY, URINALYSIS, MICRO-CHEMISTRY, ETC.

	Net Price.
Beale, Lionel S. The Microscope in Medicine. Fourth edition	\$6 50
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Behrens, H. Manual of Micro-chemical Analysis	1 60
Cabot. The Examination of the Blood for Diagnostic Purposes	3 75
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Deems, F. M. Handbook of Systematic Urinary Analysis, chemical and microscopical. Revised edition. Cloth	1 00

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Net Price.

Delafield and Prudden. A Handbook of Pathological Anatomy and Histology. Fourth edition	\$6 00
Flint, Austin. Manual of Chemical Examination of Urine	1 00
Foster and Balfour. Elements of Embryology	2 70
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Hoffman, K. D., and Ullzman, R. Analysis of the Urine	2 00
Holland, J. W. The Urine, Chemical and Microscopical Memoranda	1 00
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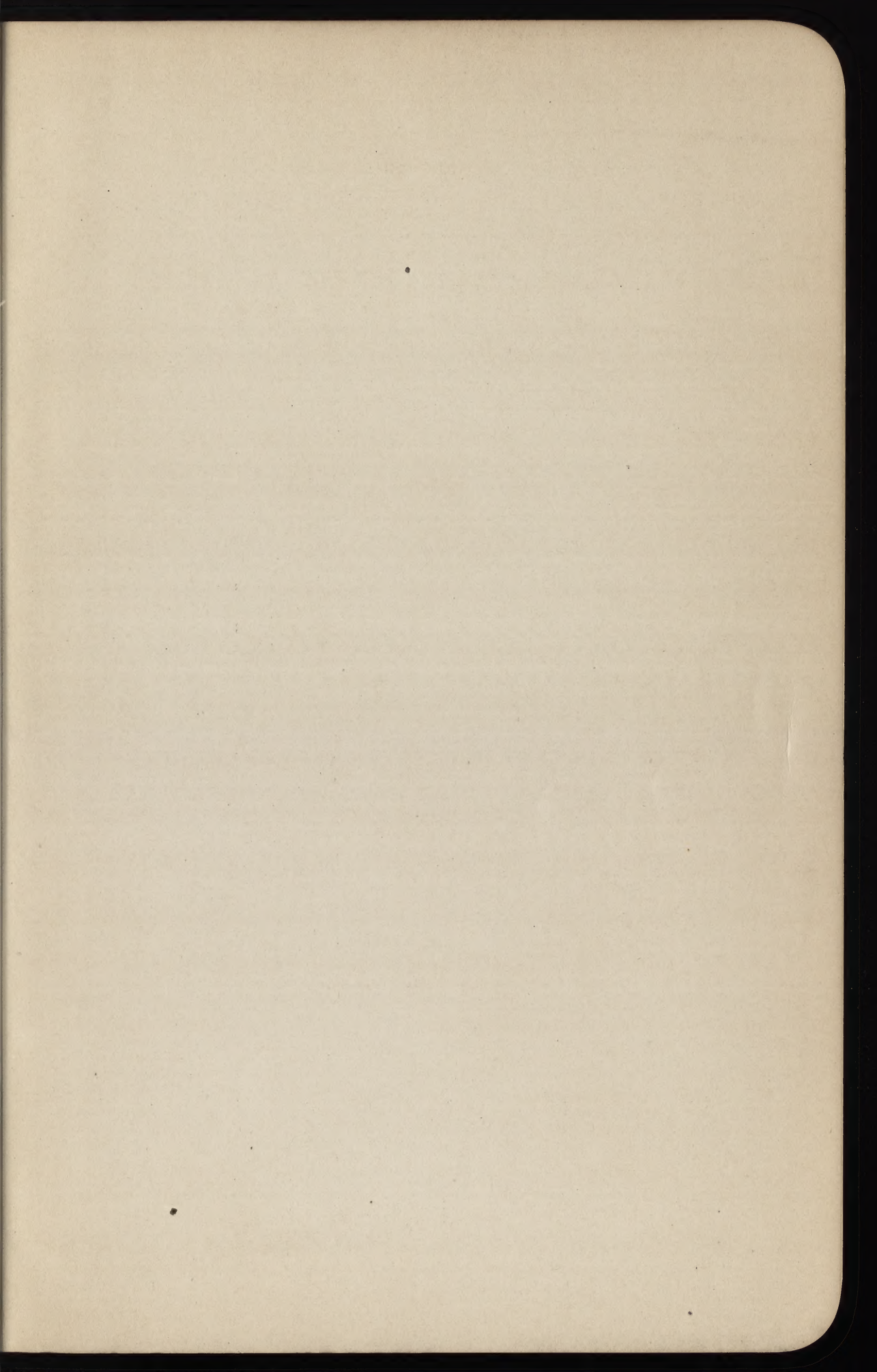
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